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Association Notes and Editorial Comment

"WORDS" AND THE NCA

SHORTLY AFTER it was published approximately fifteen years ago, the late Alfred Korzybski's *Science and Sanity* was reviewed for THE QUARTERLY by a certain professor of philosophy. The review was most critical; indeed, quite unfavorable, and Korzybski was understandably vexed.

This situation points up the universal problem of communication: how effectively can one convey, through words, his meaning to another—in this case the person reviewed to the reviewer, and the reviewer to the person reviewed? Korzybski was a pioneer semanticist, and *Science and Sanity* still is a foundation work in that field; yet he suffered the common handicap of having to use words to express his ideas, and words, as is commonly experienced, are a faulty medium of expression.

As we labor to make our meanings clear, it is essentially useless to try to explain words with other words, because these in turn must be explained with more words, quite in the manner of the old mathematical jingle:

> Big fleas have little fleas
> On their backs to bite 'em;
> And these in turn have other fleas,
> And so *ad infinitum*.

There is no meaning beyond experience. For instance, the import of as universal a fact as the rising cost of living is fundamentally private for each and every one affected by it. No two individuals can share an identical significance; and yet, it is *discussed* on every hand and everywhere. Tennyson—remember?—had Ulysses say,

> I am a part of all that I have met;
> Yet all experience is an arch wherethro'
> Gleams that untravell'd world, whose
> margin fades
> For ever and for ever when I move.

And so, to be understood, if one could keep silent and only point!

The North Central Association is a far-flung, complex organization. For years it has labored to overcome these handicaps to good understanding, both within and outside itself, with varying degrees of success. Time, energy, and money have been expended, and the process continues. On occasion, state legislatures have inveighed against it, suits at law have been filed, and local boards of education have questioned its fundamental purposes; all traceable to the problem of basic communication.

As indicated above, this problem defies complete solution. One need not labor this fact. Yet it may be pointed out that every individual who knows anything at all about the Association views it through

his own arch of experience, and the organization is too big and too complex for anyone to comprehend it in its entirety, either as to structure or functions or philosophy. Yet the Association labors patiently to overcome this handicap.

"I wonder do we ever succeed really in *communicating* our thoughts to one another," said George Bernard Shaw. He need not have wondered; we cannot.

HARLAN C. KOCH

COMMISSION ON COLLEGES AND UNIVERSITIES ADOPTS REPORTS ON GRADUATE PROGRAMS

ON MARCH 26, 1958, the Commission on Colleges and Universities adopted three far-reaching committee reports on graduate study in three areas of concern; namely, graduate preparation of teachers, off-campus offerings, and "sixth-year" programs, including the accreditation of specialized institutions which do not meet the conventional requirements for membership in the Association.

Diversity in practice, and in understanding as well, makes an official declaration in each of these areas most timely. The reports which were adopted are printed in full.

GRADUATE PROGRAMS IN EDUCATION

UNDER THE CURRENT POLICIES of the Commission on Colleges and Universities, of the North Central Association, accredited higher institutions come under review when they move from undergraduate education to the offering of graduate programs or from one graduate level to another. In recent years most of the extensions in programs have been in the area of teacher education. In attempting to evaluate these new programs, the Commission soon found itself handicapped by the existence of a variety of points of view concerning the appropriate pattern of graduate study for teachers. Accordingly, the Board of Review of the Commission requested that a Committee be appointed to study the matter and to develop a general statement of policy that would be helpful both to institutions embarking on such programs and to the Board of Review carrying on its task of evaluation.

A Committee on Graduate Programs in Education was appointed in the summer of 1955. It consisted of the following persons:

Chairman: Donald P. Cottrell, Dean, College of Education, Ohio State University, Columbus, Ohio
Harvey H. Davis, Provost, State University of Iowa, Iowa City
John R. Emens, President, Ball State Teachers College, Muncie, Indiana
William R. Ross, President, Colorado State College, Greeley
Charles J. Turck, President, Macalester College, St. Paul, Minnesota
Secretary: Allan O. Pfnister

This Committee submitted its report to the Commission at the Annual Meeting in April, 1956. The report was adopted as a statement of policy on "Programs of Post-Baccalaureate Study for Teachers Leading to the Master's Degree."

Concurrently with the development of distinctive graduate programs for teachers, American higher education was witnessing a striking expansion of organized post-Master's programs and sixth-year programs in professional education. One survey recently completed shows that while some higher educational institutions have offered such post-Master's work apart from the regular doctoral program for a number of years, over 85 percent of the current programs have come into existence since 1950. Here too, the Commission was being asked with increasing frequency to make judgments regarding a new kind of program. In October, 1956, the Board of Review voted to reactivate the Committee on Graduate Programs in Education and to instruct the Committee to direct its attention to sixth-year specialist programs. The Committee

as reconstituted consisted of three members of the former Committee—Dean Donald P. Cottrell, Dr. Harvey H. Davis, and President William R. Ross; and two new members, Kenneth E. Anderson, Dean, School of Education, University of Kansas, Lawrence, Kansas, and Robert H. Koenker, Director of Graduate Studies, Ball State Teachers College, Muncie, Indiana.

The reconstituted Committee met in March, 1957, and drew up a preliminary statement which was presented orally for discussion at an open meeting of the Commission during the Annual Meeting in April, 1957. This statement was revised during the subsequent meetings of the Committee in November, 1957, and February, 1958.

Since the adoption of the statement on "Programs of Post-Baccalaureate Study for Teachers Leading to the Master's Degree," referred to above, there has been frequent discussion among the members of the North Central Association regarding the further vertical extension of professional training for classroom teachers. While in recent years the striking growth in post-baccalaureate programs for classroom teachers has been at the Master's degree level, there has also been a development of sixth-year programs parallel to that for specialists in education. A growing number of institutions have developed or are developing post-Master's or sixth-year programs for classroom teachers as distinct from those for administrators and other specialized educational workers.

In light of these considerations, the Committee recommends certain changes in the earlier statement on the Master's degree program for teachers to bring it up-to-date and to make it apply to both Master's and sixth-year programs for classroom teachers.

On the pages that follow, the new statement on "Programs for the Preparation of Master Teachers" appears first. It is followed by the statement on "Programs for Specialists in Education."

*Statement of Policy on Programs for the Preparation of Master Teachers**

As a preface to this statement of policy, the Commission wishes to make these comments:

1. It is important to recognize that there are several appropriate types of degree programs for the classroom teacher. A few teachers may profit most from a graduate program in a subject-matter field such as mathematics or English, leading to a conventional advanced degree. Counselors, supervisors, and other school specialists are often best trained through a graduate major in the field of Education. The statement that follows describes the characteristics of an acceptable graduate program of a third type—a program intended specifically for the development of master teachers rather than subject-matter or technical specialists.

2. The Commission makes a distinction between a program of study for teachers and one for the preparation of specialists. An institution cannot justify as a program for classroom teachers a curriculum that is heavily weighted with professional courses in administration or other non-teaching specialties.

3. The Commission makes a distinction between a graduate program for teachers leading to an advanced degree and a program that consists only of an additional year of undergraduate study beyond the baccalaureate degree. Fifth-year undergraduate programs cannot be considered as acceptable programs leading to an advanced degree. (In another field of study undergraduate liberal arts institutions offer in cooperation with engineering colleges a program consisting of five years of undergraduate study at the completion of which the student receives two Bachelor's degrees, an Arts degree and a Science degree.)

* This statement refers to programs leading to a Master's degree and to a sixth-year credential termed the Specialist in Teaching and is to be distinguished from the statement referring to the program for the Specialist in Education. The latter program is discussed in the statement that follows this one.

A graduate program should involve work at a higher level than that characterizing undergraduate study.

4. The Commission observes that graduate study at the Master's degree and sixth-year levels for teachers is usually terminal as distinguished from graduate work which is a step toward the Doctor's degree.

A. Students

The students admitted to a graduate program for teachers should be expected to perform academically at a level higher than that required of the average undergraduate. Since any program of instruction tends to adapt itself to the level of the students enrolled, it is important that the students in a graduate program for teachers be high in general ability. The institution should devise means of selecting students with the requisite competence. This implies that institutions will employ a policy of selective admission for teacher candidates at the undergraduate level as well, and will recommend for certification only those well qualified. If the institution intends to offer a program that is genuinely of graduate caliber, it must resist the temptation to accept inadequate standards of preparation in the desire to "serve the needs" of every person within its geographical area.

In a program of advanced study for teachers leading to the Master's degree, it seems reasonable to expect that the majority of the students will have had some experience in teaching. The courses of instruction can thus be of such a nature that they will take into account the experience and maturity of the students. It seems reasonable at the present time to expect that the majority of the students will have qualified for certification under the laws of the state in which they are teaching or plan to teach. The structure of the program should not preclude the admission of persons without teaching experience or without certification, but these persons would normally be in the minority.

It is expected that students in a sixth-year program will ordinarily possess a Master's degree or its equivalent in academic training. In the case of a two-year integrated program leading to a sixth-year credential, the student may be admitted with less than a Master's degree, but provision should be made within the program for the broad base typical of a good Master's program. Since the sixth-year program is primarily designed to aid the practicing teacher to improve himself rather than to prepare persons for entering the teaching profession, the student admitted to the program should also have had previous teaching experience in sufficient amount to indicate his promise as a master teacher.

The institution should be able to demonstrate that there is enough demand for a graduate program for teachers in its service area to assure a sufficient number of students for a well-developed program. The students should have opportunities to discuss problems, issues, experiments, and opinions with other students having similar interests, backgrounds, and plans.

B. Financing the Program

Graduate instruction is proportionally more expensive than undergraduate instruction. Graduate instructors teach fewer classes; fewer students are enrolled in graduate classes; and additional facilities—especially in the library—are required.

An institution initiating a graduate program should expect to enlarge its academic staff. A satisfactory graduate program cannot be developed by adding responsibilities for graduate instruction to persons who already devote full time to undergraduate teaching.

An institution should also expect to increase its library budget before it offers graduate work. Students studying at the graduate level will require a greater number and more specialized types of books, periodicals, yearbooks, pamphlets, courses of study and curricula, microfilms, movies, and other visual materials than will undergraduate students.

Some increase in facilities in the form

of seminar rooms may be required.

Experience shows that an acceptable graduate program will not pay for itself. An institution contemplating graduate instruction should not deceive itself by thinking it can have a high caliber program on a self-supporting and casual basis. No institution should contemplate graduate instruction unless its undergraduate program is already adequately financed. The additional students attracted by the graduate program will neither absorb the expense of the graduate program nor provide a hitherto untapped source of income for the support of the undergraduate program. An institution should be able to show in some detail the expenses contemplated in connection with the offering of the graduate program and how these expenses are to be met.

In short, it is reasonable to expect that an institution initiating a program of graduate instruction has provided for an appreciable increase in its over-all budget.

Program

C. Relationship to the Undergraduate

An institution should not embark on a program of graduate instruction at the Master's level unless it already has a better than average undergraduate program. Because of a certain amount of overlapping in the staff, the caliber of the graduate instruction will in part be a reflection of the caliber of instruction at the undergraduate level. The caliber of the graduate student body will bear a relation to the caliber of the undergraduate students. The intellectual tone of the graduate program will be an extension of that of the undergraduate division. In both administration and financing the graduate program will be affected by the undergraduate division.

An institution should also recognize that the addition of a graduate program will have significant effects on its undergraduate program. An adequate graduate program involves much more than simply adding courses to the existing undergraduate program. Unless substantial additional resources are forthcoming, the added burden imposed by the initiation of a graduate program is quite likely to reduce a good undergraduate program to mediocrity. Resources—staff, finances, facilities—which are sufficient for the operation of an adequate undergraduate program only will not support both an undergraduate and a graduate program.

An institution offering a sixth-year program should have a well-established Master's degree program (ordinarily it will have a doctoral level program). The Master's degree program should be well enough established so that the inauguration of the sixth-year program will not endanger the quality of the existing graduate program.

In the interest of instituting and maintaining a level of work that is truly of graduate caliber the number of courses open to both graduate and undergraduate students should be limited. Unless there is a sufficient number of courses open to graduate students only, the graduate program is likely to be very little different from the undergraduate program.

D. The Curriculum

It is not the function of the Commission to describe in detail the organizational structure of a program of advanced study for teachers. Each institution must determine the details of its program in the light of its own purposes and circumstances. The Commission does, however, wish to call attention to some of the significant problems and to suggest possible lines of development.

An initial problem is that of determining the relative emphasis to be placed on satisfying the highly specific needs of the individual student as against maintaining a highly prescribed program. Since the essential purpose of the program is to educate master teachers, considerable attention should be given to the specific needs of the individual student. In the sixth-year program the curriculum will be tailor-made to the needs and background of the student. The sixth-year program should, however, be a coherent and organized program leading to a degree or a

certificate; it must not be simply a collection of miscellaneous courses added to a program. The needs of the individual student should be evaluated in terms of a clear conception of the competencies and qualities of an effective teacher. A highly prescribed course of study would not seem suitable in a program in which there will be persons of different levels of maturity, training, and experience. On the other hand, without some carefully laid guidelines it is too easy to identify student needs with casual demand or with whatever happens to be available.

The academic preparation of a teacher involves three areas—development of breadth and depth in general education, in professional education, and in the teaching field. A graduate program for the teacher will include courses designed to advance him in all of these areas, i.e., graduate courses in general education, professional education, and the teaching field. The relative emphasis placed on each of these elements may be determined by the institution in the light of its own philosophy of education. However, the major portion of the course work should be in the area or areas of the candidate's teaching speciality.

Another problem is the determination of the amount of undergraduate level work that may properly be considered as part of a graduate program. It is conceivable that a program consisting almost entirely of undergraduate courses will add in significant ways to the student's general background and thus to his effectiveness as a teacher. The Commission feels, however, that such a program cannot properly be called a graduate program. Graduate study should be of an advanced nature with the emphasis on original and mature thinking rather than on filling gaps in one's undergraduate training. While some allowance can be made for undergraduate courses, the amount of graduate credit permitted for this work should be kept at a minimum. The Commission would seriously question the graduate caliber of a program in which much of the work appeared to be elementary. This is true with respect to any of the three areas mentioned above.

Study in that part of the graduate program designated as the teaching area should be of an advanced nature. Where advanced study in the teaching field is precluded by lack of preparation at a lower level, graduate credit should not be given for courses required to bring the student to the point at which he can profitably engage in advanced study. For example, advanced algebra and solid geometry are normally considered secondary school or lower division college courses. There would be little reason for permitting a graduate student to take these courses for graduate credit simply because he had failed to take them as an undergraduate. Unless some such principle is followed the distinction between graduate and undergraduate work is quickly erased, and another principle begins to operate, namely, that graduate work is whatever a student happens to take after receiving his Bachelor's degree.

Likewise, removal of deficiencies in the area of undergraduate professional education which prepares a student for initial certification should not be considered as part of an advanced degree program.

While courses of a general education character at the graduate level may not assume a great deal of previous training in the area, such courses should nevertheless take into consideration the maturity of the graduate student. Since elementary courses in subject-matter areas ordinarily assume that a sequence of courses will follow, and are organized as preparation for one who will continue to study in the field, they are not usually appropriate for graduate students. Moreover, general education courses developed especially for graduate students are preferable to courses developed primarily for undergraduates.

The Commission recognizes that a distinction may be made between the preparation of elementary school teachers and that of secondary school teachers. The

graduate program for the elementary school teacher may well be more general than would be appropriate for secondary school teachers.

A third problem is the determination of the place of professional courses in Education. While a certain portion of the program can be properly devoted to studies in professional education, a program consisting almost entirely of professional courses is not adequate for teachers. The professional courses must be kept in proper proportion to courses in the teaching field and in general education.

A fourth problem involves the determination of the place of research in a program designed to prepare master teachers. The traditional departmental advanced degree program is designed to produce the expert in a particular subject-matter field. The degree ordinarily marks a step toward the Doctor's degree, which with few exceptions is earned on the basis of the completion of a program of research. The departmental Master's degree has thus come to be a first research degree. Since, however, the purpose of graduate study in teaching is not to train experts in research but to contribute directly to effectiveness in teaching, the question may be raised as to whether research properly has a place in such a program at all.

The problem is complicated by the fact that recently in some fields the departmental Master's degree has lost some of its research emphasis. In some institutions, the Master's degree may now be taken under alternate plans. The student may elect to take the degree with thesis, which presumably is a piece of original research, or with one or more papers, which ordinarily involve little or no original research.

One of the bases upon which a decision on the place of research should be made seems to be the purely utilitarian one of whether or to what extent research will contribute to the student's effectiveness as a teacher. Will the student be a more effective teacher, for example, from having conceived and carried through a significant project in the area of learning theory? Is research to be accounted a fourth area distinct from the student's preparation in his teaching field, his preparation in general education, and his preparation in professional education? A Master's degree program for teachers will normally encompass a year of full-time study, totalling approximately thirty semester hours of classwork. Can the student, within the limited amount of time afforded in the Master's program, develop a significant problem and arrive at a significant answer? Does the sixth-year program afford sufficient additional time for research?

A distinction is sometimes made between education for the producer of research and education for the consumer of research. Most doctoral programs are intended for the producer of research. The doctoral student ordinarily is expected to develop skills in handling problems and to demonstrate the ability to produce an "original contribution to knowledge." Many departmental Master's programs are minor editions of research-oriented doctoral programs. However, the program of advanced study for teachers does not propose to train specialists in a departmental subject-matter area. Thus it is frequently contended that teachers should be educated as consumers of research rather than as producers of research. It is said that it is more important for the teacher to keep abreast of the latest research than for him to engage in research, and that the emphasis in the graduate program for teachers should be upon developing skill in reading critically and in drawing logical inferences.

Making a distinction between educating the producer of research and educating the consumer of research does not solve the problem, however. Shall the consumer of research be trained, for example, in interpretation of statistical methods of research, or in the interpretation of historical methods of research, or in an understanding of experimental design, or in all three? How many courses does he require?

Is it necessary for even the consumer of research to engage in a certain amount of research before he can evaluate other research? Or is a broad acquaintance with the language of the field and some training in problem solving and critical thinking sufficient for the consumer of research?

As a basis for a policy on the place of research in a graduate program for teachers, the Commission reiterates the following propositions relative to the orientiation of the program:

1. Training in research is not in itself an end in a graduate program for teachers.
2. The time which a student in a graduate program for teachers at the Master's level can actively devote to research will be relatively restricted. More opportunity for research is afforded in the sixth-year program.
3. Graduate study is more than the amassing of course credits. It demands a certain level of maturity and the ability to make critical judgments.
4. The program of graduate study in a teaching field should prepare the student to face teaching problems in a critical spirit and to seek continuous improvement of his teaching through study and experimentation.

In the light of these propositions, the Commission has reached the following conclusions:

1. The graduate student should be acquainted with the language of his own field and the language of the field of Education. He should also be acquainted with the methods of research in both fields. Acquaintance with the language of the field and with the methods of research in the field can probably be more effectively secured through experiences in a number of courses that are not strictly research courses than in a single so-called research methods course.
2. Acquaintance with the language of the field and methods of research in the field cannot, however, be secured if the matter is left purely to chance. Each student should be given the opportunity to gain the requisite knowledge within—though not exclusively so—the structure of the required courses of the program.
3. The graduate student at the Master's level should be given an opportunity to prepare some papers in which he weighs results, evaluates, and interprets. These papers should probably not be formal research papers. They may be papers prepared as part of the regular course work.
4. A special research project should be required as part of the sixth-year program. The particular type of research project undertaken may follow any one of a wide variety of directions. For example, it may represent an attempt at interpreting and bringing together in a systematic way a body of research dealing with the field of specialization. It may involve the development and testing of a new research design, or it may be directed at a special problem related to the student's field of specialization. The nature of the project should be determined in the light of the experience of the student and should be clearly related to the field in which he is teaching.
5. Where possible, the instructor of any course should make a conscious effort to acquaint the student with some of the research reflecting upon the course and with the sources of research reports about the material covered in the course. It seems logical to suppose, furthermore, that when there is opportunity, the instructor will point out and evaluate relevant research data in support of his presentation.
6. There is merit in providing for graduate students an opportunity to engage in a number of seminars in which the problems dealt with are significant, manageable, and relevant to the field. Such seminar experience might be more valuable than work on an extended research project.

E. Staff

The faculty assigned to teach graduate courses should be carefully selected on the basis of competency in the field, educational background, skill in teaching, and interest. It is probably unnecessary to say that persons teaching at the graduate level should themselves have done a substantial amount of advanced work. Certainly members of a graduate faculty teaching in the Master's program should have carried on study beyond the Master's degree. Furthermore, although the graduate program for teachers is not research oriented, it is expected that there will be a larger proportion of persons with the Doctor's degree teaching in the graduate program than in the undergraduate program. Faculty members teaching in the sixth-year program should ordinarily possess the Doctor's degree or its equivalent.

There should be a graduate faculty designated as such with a schedule of classes appropriate to the increased amount of direct student-faculty contact required in a graduate program. The graduate faculty should not consist of persons who are teaching graduate courses in addition to their normal load of undergraduate courses. The graduate faculty should have

ample opportunity for individual conferences and instruction. An institution establishing a program of graduate instruction will require additional staff members to carry on the major part of the graduate instruction.

Provision should be made for the formal organization of the faculty members responsible for the graduate program. As a graduate faculty they should have the opportunity to meet and discuss problems and plans for the operation of the program. The minimum organizational structure should provide for a graduate council or committee and a director or dean who will assume the primary responsibility for the direction of the program. The details of organization will depend upon the overall organization of the institution and the size and requirements of the graduate program.

F. General

The amount of extension and off-campus study which may properly be considered a part of the graduate program should be limited. With few exceptions the graduate work should be on the campus under the regular graduate faculty where the library and other facilities of the institution are readily available. While the Commission recognizes that restricting the program to the campus and to regular periods of instruction will work a hardship on some of the persons who wish to undertake the program, it should be emphasized that this is a description of a *graduate* program and that the concern should not be with the ease of securing a degree but with the maintenance of a quality program.

The time permitted for the completion of the program should be limited. It is probable that an advanced degree program which is completed course by course over a period of six to seven years loses some of its impact. There is good reason to believe that the student gains by being involved with others in a concentrated block of courses.

An institution embarking upon a program of graduate instruction for teachers should be strong not only in the field of professional education but in a number of content areas as well. The undergraduate program should as a whole be above average. An institution should also restrict its efforts to those subject-matter areas in which it is doing its best work.

An institution planning to offer instruction at the graduate level should be able to show that it is doing so only after a considerable period of intensive study. The institution should also be able to demonstrate that there is a need for such a program in the area which it serves and should give evidence that it has sufficient financial resources available to operate the additional program.

*Statement of Policy on Programs for Specialists in Education**

We live in a society that is becoming increasingly complex and that requires an ever-growing number of persons with specialized competencies. The need for such persons is as great in the formal educational enterprise as in other social enterprises, and recent years have witnessed the emergence of such educational specialists as: curriculum consultants; subject-matter consultants and resource persons, guidance and counseling workers, such as school psychologists or psychometrists; business managers; directors of special education; school plant and building consultants; public relations directors; school administrators; school librarians; instructional materials specialists, including audio-visual directors, and other special consultants and supervisors.

These educational specialists provide invaluable assistance to both the classroom teacher and the administrator. The sheer increase in knowledge in existing fields makes it exceedingly difficult, for example, for the classroom teacher to

* This statement refers to programs leading to the credential of "Specialist in Education" and is to be distinguished from the statement referring to Master's degree and sixth-year programs for the classroom teacher. The latter programs are discussed in the statement that precedes this one.

keep abreast of the latest research and developments, a problem that is compounded by the emergence of many new fields. Moreover, the teacher faces a bewildering array of new teaching materials, and the need for persons competent to translate research into practice and to act as consultants and resource people is great if teachers are to carry on their appointed tasks with maximum effectiveness. The administrator, although a specialist himself, also feels the pressures of complexity and needs the support of other specialists. As his tasks multiply, he finds himself calling more and more frequently upon a corps of specialized assistants. New kinds of administrative positions and new types of administrative assistants at different levels in the administrative structure are emerging.

To provide the kind of training needed by the specialized personnel in modern school systems requires sound and imaginative planning. On the one hand, the educational specialist must be a person with a high degree of competency in his specialty; he must have sophisticated know-how. On the other hand, he must be more than the "narrow" specialist who knows only his own specialty; he must be able to view his specialty perceptively in the context of the situation in which he works. He must be technically proficient and he must also be able to integrate his contribution into a larger pattern while adapting his specialty to the broader problems of the system in which he works. He must have the capacity to use his specialized skill in the service of larger educational interests through the processes of program development and operation.

The Commission believes that a program required to train the kind of person described above should have the following general characteristics:

a) It should be a coherent and unified program leading to a degree*; it should be distinguished from the mere accumulation of additional course credit beyond the Master's degree. Because the contents of any given program will necessarily be tailored to the needs of the individual specialist, adequate safeguards must be introduced to guarantee that the program does not become little more than a collection of miscellaneous courses.

b) Its content should be designed so as to assure that the student will achieve a proper balance between the experiences required for his training as a specialist and those required for his development as a professional educator working with other educators. Since the background of the individual and the needs of the position may vary greatly, the program should be tailor-made to the needs of the individual specialist. Consideration for the manner in which his background and speciality differentiate him from other specialists should not, however, obscure the student's common interests with other professional educators.

c) The specialist program will normally be a sixth-year post-Master's degree program, and the Master's degree will ordinarily be a prerequisite for admission. The Master's program should provide a broad base for the specialist program. In the case of a two-year integrated program leading to the sixth-year credential, the student may be admitted with less than a Master's degree, but provision should be made within the program for the broad base typical of a good Master's program.

d) The specialist program will normally be a terminal program. It serves a different purpose from that typically served by the study leading to the Doctor's degree, and it should not be viewed as a truncated doctoral program. It is a complete program in its own right. A person completing a sixth-year specialist program should

* In the interest of maintaining some uniformity, the Commission urges that the title, "Specialist in Education," be applied to the degree earned at the completion of the program herein described.

not be precluded from entering a doctoral program, but he should not expect to be able to transfer all of his work to the latter program. Some of the experiences appropriate to the specialist program will probably not be appropriate to the typical doctoral program.

A. The Characteristics of the Institution Qualified to Offer an Adequate Specialist Program

The Commission believes that an institution offering a sixth-year specialist program should have the following characteristics:

a) It should clearly define the philosophy, purposes, and aims of its specialist program. These must be related to its resources and the requirements of its constituency. Strong pressures will be brought to bear on an institution to offer a great variety of specialist programs, and it will find it necessary to delimit clearly the kinds of concern to which it can most effectively address itself in the light of its purposes and circumstances.

b) It should have a well-established and adequate Master's degree program (ordinarily it will have a doctoral level program). The Master's degree program should be well enough established so that the inauguration of the specialist program will not endanger the quality of the existing graduate work. A minimal operation at the Master's degree level will not afford the breadth and strength needed for a well-conceived program of advanced specialization at the sixth-year level.

c) It should maintain an advanced undergraduate program of sufficient breadth to permit the educational specialist to secure such acquaintance with areas cognate to his field of specialization as is needed to round out his preparation.

d) It should have available or have access to an adequately prepared staff, in sufficient number, a staff with the time and background necessary to offer the required specialized courses. Persons involved in instruction in the specialist program should be prepared at a level normally expected of persons offering graduate courses in typical doctoral programs. Practitioners with special qualifications can be effectively used as part-time staff members, but a strong specialist program will not be overly dependent on such part-time persons.

e) It should have an adequate library. The library will occupy an exceedingly important part in the specialist program, since much of the work will probably be by independent study and will be highly technical in nature. It should be able to show that its holdings are appropriate to the particular specialized areas in which work is offered. While in some fields the holdings adequate for a strong Master's degree program will be sufficient for the specialist program, in other areas additional resources will be required. An institution embarking on a specialist program should prepare to augment its library holdings where necessary.

f) It should have adequate physical facilities to provide the educational experiences required in a highly specialized program. In some instances special laboratory facilities may be required.

g) It should be able to offer adequate opportunities for practicums and internship experiences. Close cooperation with practitioners in the special fields is important, and provision should be made for the services of such practitioners in situations where the experiences of the student can be properly supervised and directed.

h) If the institution is to provide an adequate staff and adequate facilities, it should be able to demonstrate that it has adequate financial resources to operate a highly spe-

cialized program. Experience shows that programs like the educational specialist program herein described are exceedingly expensive to operate and that they should not be entered into with the expectation that they will provide additional income for the general operating budget of the institution.

B. The Characteristics of the Curriculum and Instruction in an Adequate Specialist Program

Given adequate facilities, finances, and staff, the institution should use these elements effectively to build a program which will provide the student with the variety of experiences necessary to equip him as a skillful professional worker who has a clear grasp of the implications of his speciality for the organization which he serves. The Commission believes that the characteristics of such a program include the following:

a) Since the persons involved in the program will be mature individuals, they should be able to carry much of the work on an independent basis. Adequate provision should be made for seminars, practicums, field projects and other types of practical experience. Where necessary the student should be able to cut across departmental and divisional offerings. At the same time, in order that the program may have a clear purpose and direction adequate provision must be made for supervision. The institution should be able to provide evidence that the various types of less formal instructional experiences are undertaken under adequate guidance and that careful evaluations are made of the student's performance.

b) Although the basic content of the program can vary from student to student, the institution should clearly define the basic knowledge and competencies requisite for a given specialty. The student's experiences, with due regard to prior work and study, should be centered around this basic content.

c) The major portion of the course work of the student should be in his area of specialization. Because the content of the program for a given student will be so largely determined by his needs and background, an institution planning to initiate a specialist program should carefully canvass its resources to assure itself that it can offer specialized courses in sufficient number and depth for the specialty in which it proposes to prepare professional workers. Adequate opportunity should also be available for study in cognate areas.

d) In the interest of maintaining a level of work that is truly of graduate caliber, the number of courses open to both graduate and undergraduate students should be limited. Unless there is a sufficient number of courses open to graduate students only, the graduate program is in danger of being very little different from the undergraduate program.

e) A special research project should be required as part of the program. The particular type of project may follow any one of a variety of directions. For example, it may represent an attempt at interpreting and bringing together in a systematic way a body of research dealing with the field of specialization. It may involve the development and testing of a new research design, or it may be directed at a special problem that is related to the student's area of specialization. The project should be of such a nature as to allow the student to demonstrate his technical skill in the field of specialization and his recognition of the implications of his specialty for the educational enterprise in general. The amount of course credit allowed for the project should be kept within reasonable limits. Ordinarily universities do not permit credit for a research project

to exceed one-fifth of the total credit required for the degree or credential.

f) The institution should set a definite time limit within which the specialist program can be completed. When too long a period of time elapses between the initiation and completion of a program the impact of the concentrated work required for developing a high level of specialized skill may be lost.

C. The Student in the Specialist Program

The institution should define the kinds of skills and experiences the entering student should have to profit most from the specialized program. Admission requirements should be clearly stated in terms appropriate to the specialized positions for which instruction is to be given. Before accepting a student for a program the institution should assure itself that it has the resources requisite for the kind of program the student needs in terms of his prior preparation and experience. With respect to entering a specialist program the Commission makes the following general recommendations:

a) Ordinarily the student should possess a Master's degree or its equivalent in academic training. In a two-year integrated program leading to a sixth-year credential, the student may be admitted with less than a Master's degree.

b) Before entering specialized training the student should have had previous experience appropriate to his area of specialization. The specialist program is not a program primarily designed to afford the student an opportunity to begin a career in an entirely new area of endeavor. An adequate specialist program must build upon the previous experience and training of the student. For example, a curriculum coordinator should probably have had a certain amount of teaching experience at the school level at which he intends to pursue his specialty. The school psychologist should have had some experience in administering and interpreting tests. The business manager should have had some experience in working with accounts and budgets. Thus work in specialized programs is an extension of the student's skill rather than an introduction to a new kind of preparation. It is inconceivable that a person can become the kind of specialist described in this statement within a year by beginning the area of specialization *de novo*; that is, without previous experience or study.

The institution should carefully determine and publicize the principles of selection it intends to employ in choosing students for the specialized program. Admission to candidacy for the specialist degree or certificate should be based upon appropriately high performance at the Master's degree level or at its equivalent. The student should have demonstrated that he is of sufficiently high quality to pursue a highly specialized and difficult program with profit and promise.

OFF-CAMPUS PROGRAMS

In June, 1956, the Board of Review devoted part of its spring meeting to a discussion of the rapid increase in the number of institutions establishing off-campus institutional programs. At the conclusion of this discussion the Board requested the appointment of a Committee on Off-Campus Programs and charged it with drawing up a "statement of policy outlining with some specificity the needs for staffing, facilities, and financing in order to insure that such programs are carried out under the most favorable circumstances." The members subsequently appointed were:

Chairman: L. H. Adolfson, Director, University Extension Division, University of Wisconsin, Madison

W. Boyd Alexander, Vice President, Antioch College, Yellow Springs, Ohio

Fred K. Eshleman, Dean, Henry Ford Community

College, Dearborn, Michigan
Warren C. Lovinger, President, Central Missouri State College, Warrensburg, Missouri
George P. Tuttle, formerly Registrar, University of Illinois, Urbana, Illinois
Secretary: Allan O. Pfnister

The Committee on Off-Campus Programs held its first meeting in Chicago on October 31, 1956. At this meeting it proceeded to draw up an outline of the items it considered relevant to a statement of policy and requested the Office of the Secretary of the Commission on Colleges and Universities to gather additional background data. Pursuant to this charge the Office directed an inquiry to all member higher institutions in the Association to determine the number and kind of off-campus instructional programs currently under way, requested information from other regional associations regarding their approaches to off-campus programs, and summarized studies of the problem reported in the current literature. These materials were brought together and a preliminary statement drafted for the second meeting of the Committee in February, 1957.

Following this meeting of the Committee, a draft of a statement of policy was presented informally for discussion at the Annual Meeting of the North Central Association in March. Subsequent to the Annual Meeting the Committee met two times. The Statement which follows is the final report of the Committee.

Statement of Policy on Off-Campus Instructional Programs

Introduction

In recent years there has been rapid increase in the number of programs in which class instruction is given at locations other than the campus proper. As higher educational institutions face the prospect of record increases in enrollment in the future, it is likely that the pressures for establishing off-campus programs will become even greater. The following statement is made in the interest of encouraging the maintenance of educational quality and of providing a basis for the evaluation of these new programs by the Commission on Colleges and Universities of the North Central Association.

The term "off-campus instruction" as used in this statement refers: (1) to instruction carrying college credit given in another locality, outside of the city or town in which the parent institution is located, irrespective of the manner in which it is is administered, and (2) to special courses involving college credit given in the same town or city and established for persons not enrolled for regular resident instruction in the institution. The range of activities covered in off-campus programs may vary from the offering of individual credit-bearing courses (graduate and undergraduate) in various localities in an institution's service area to the offering in a single location of a block of courses sufficient in number and scope to permit a person to earn an undergraduate or graduate degree on a full-time as well as a part-time basis without additional study on the campus of the parent institution. Off-campus study also includes special programs such as television and travel courses.

A. Definition of Function

An institution offering off-campus instruction should define clearly the functions to be served by such instruction. Specific reference should be made to the ways in which the off-campus courses are related to the regular instructional program. Where the functions of the off-campus instructional program differ from those of the campus instructional program, the institution should clearly define the points of difference.

B. Administration and Supervision

The parent institution should indicate clearly the measures it takes to supervise off-campus offerings, whatever their nature or scope. Among the procedures that may be employed is to have a regular and systematic visitation of centers or

branches by deans or chairmen of departments of the parent institution.

In operating or in planning to establish an off-campus program an institution should consider whether such a program brings with it unnecessary or unwise duplication with other institutions in the area.

In locations where limited offerings are provided.—Where the offerings at an off-campus location are not sufficient in number or scope to require a full-time teaching and administrative staff, appropriate administrative arrangements should be made to insure adequate supervision of courses and curricula carrying college credit so that requirements and procedures are equivalent to those for the same or similar courses offered at the parent institution.

Provision should be made for keeping at the parent institution records on such matters as student performance, enrollments, and teaching loads, for the purpose of facilitating departmental and divisional supervision. The departments or divisions of the parent institution should approve the courses in their respective fields which are offered off-campus and should, through the appropriate college officers, approve the faculty teaching those courses. Credit courses offered off-campus, when different from regular campus courses, should be approved through the regular institutional procedures required for the approval of new resident courses, and their descriptions should be published in the appropriate announcements of the institution.

In locations where more extensive offerings are provided.—Where the offerings at an off-campus location are extensive enough to require a full-time teaching and administrative staff, adequate provisions should be made for close coordination between the parent institution and the location.

Information on courses, student performance, faculty loads, and instructional plans should be readily available to the parent institution so that the departments and divisions of the parent institution can exercise proper supervision of the offerings. Means should be provided whereby the faculty at the off-campus location can be represented in general institutional policy discussions. The admissions policy should be the same as that at the parent institution. The basic pattern of courses offered should be worked out in consultation with the appropriate administrative personnel at the parent institution. The location at which a student completes his work should be indicated on his official record.

C. Staffing

To the extent possible, instructors assigned to teach off-campus credit courses should be members of the regular full-time teaching staff of the parent institution. Persons employed, either full time or part time, to teach off-campus credit courses should be appointed under procedures customary for regular appointment in the parent institutions. Their qualifications should be comparable to those of the faculty conducting comparable classes on the campus of the parent institution.

As a general principle, it is questionable whether high-level credit courses can be conducted at off-campus locations staffed solely or even in major part by part-time persons whose only connection with the parent institution is through the occasional teaching of a course or two. The quality of an off-campus instructional program in which the major part of the teaching is being done by such part-time personnel would certainly be open to serious question. Where the program has developed so that extensive course offerings are concentrated at a single location there should be a permanent corps of instructors assigned to insure sound and continuous service and to stimulate and encourage staff interest and loyalty.

The nature of the teaching load has an important bearing on the quality of teaching. To assure that the quality of instruction in off-campus courses be comparable to that in courses at the parent institu-

tion, the conditions of service for persons engaged in teaching off-campus courses should in all possible respects be the same as those for persons teaching in the regular on-campus classes. There should be a clear-cut policy regarding the circumstances under which a faculty member of the parent institution may be allowed to assume a heavier than normal teaching load by accepting assignments in off-campus programs. In a permanent location the policy on teaching load should be the same as that at the parent institution. In the general context of maintaining equitable teaching loads, it is pointed out that the extensive use of full-time high school teaching personnel as part-time instructors in off-campus credit classes is considered a questionable practice. To employ for additional hours of teaching a person who has already completed a full day of high school instruction can be unfair both to the teacher and to the class.

D. Admissions, Academic Requirements, Student Personnel Services

Admission to credit courses at off-campus locations should be based on the same requirements that are in force for admission to comparable courses offered at the parent institution. Students who are candidates for degrees and who are pursuing their studies at off-campus locations should be held to the same academic requirements as those under which students enrolled in campus courses must pursue their work. Appropriate regulations should be adopted regarding the amount of work for which a student not devoting his full time to study can register at an off-campus center. Adequate provision should be made for the counseling of students. In a permanent location many of the student personnel services performed at the parent institution may have to be duplicated.

Ordinarily, the amount of off-campus study which may properly be considered part of a graduate program should be limited and in all cases it should be under the direct supervision of the resident graduate faculty of the parent institution.

E. Facilities

Adequate instructional facilities are a prerequisite for a good instructional program. The use of facilities designed for other than instructional purposes can place both instructor and class under serious handicaps.

Where special types of facilities, such as science laboratories, are required, adequate provision should be made for approval of the same by the respective departments and officers of the parent institution.

An adequate supply of books and periodicals should be provided to meet the library needs of students in off-campus programs. Without adequate library facilities, highly technical and research-oriented courses at off-campus locations are obviously precluded. The mere presence of a city, village, or school library in the vicinity of the off-campus location does not assure that library needs are adequately met. The institution should assure itself that the combined local library resources and those of the parent institution can supply the materials needed by students. Where permanent locations have to duplicate some of the library functions of the parent institution, provision should be made for coordinating the work of the library at the location with the library at the parent institution.

In all instances, in meeting the needs of the off-campus programs the parent institution should avoid depleting its own resources.

F. Financing

Off-campus instructional programs should be supported financially at the level of adequacy for similar programs at the parent institution. Because of the conditions under which off-campus classes may have to be offered, the amount of financial support needed for some courses may be even greater than that required for comparable courses on campus.

G. Procedures for the Accreditation of Off-Campus Programs

Re-examination of an institution offering only a limited number of courses at

one or a small number of different geographical locations will ordinarily be unnecessary unless the quality of the parent institution itself is called into question.

When an institution extends its offerings in such a way as to involve a large number of isolated classes, its program may be reviewed, and when an institution establishes a center where regular full-time instruction is offered and where students may complete a substantial portion of their credit courses, the center will itself be subject to an exploratory visit or examination as soon as its establishment has proceeded to the point where a fair appraisal can be made. In the course of the normal review of member institutions, when an institution has a large number of off-campus classes or a center, these parts of its program will be included in the general review.

Whenever the program of instruction offered at a center is found to be below the level of quality normally expected in institutions offering a comparable level of work, the accreditation of the institution sponsoring such work may be placed in jeopardy.

In the re-examination of an institution advancing its program vertically to a new degree level, such extension centers or branches as it operates may be subject to examination when the institution itself is examined.

SPECIALIZED INSTITUTIONS AND PROGRAMS

IN RECENT YEARS the Commission on Colleges and Universities has been increasingly faced with two somewhat related problems having to do with the accreditation of programs highly specialized in nature. At the 1957 Annual Meeting of the Association the Board of Review authorized the appointment of a special committee to examine these problems and to report its findings. The members of the Committee are:

Chairman: J. H. Jensen, Provost, Iowa State College, Ames, Iowa
Ralph L. Collins, Associate Dean of the Faculties, Indiana University, Bloomington
Harry F. Corbin, President, University of Wichita, Wichita, Kansas
Jerome J. Marchetti, S.J., Dean of the College of Arts and Sciences, St. Louis University, St. Louis, Missouri
Herman A. Moench, Dean of Engineering, Rose Polytechnic Institute, Terre Haute, Indiana
Secretary: Donald M. Mackenzie

The Committee has completed its study and submits herewith its report for approval.

One of the two problems with which the Committee has dealt has to do with the accreditation of institutions which do not meet the criterion for eligibility for membership with respect to the nature of the program offered. It may be helpful to review the Association's "Statement of policy Relative to the Accrediting of Institutions of Higher Education" which reads in part as follows:

Eligible Institutions

To be considered by the Association an institution must be incorporated as a non-profit corporation devoted primarily to educational purposes and legally authorized to confer collegiate degrees or to offer a definitely described portion of a curriculum leading to such a degree, or to offer curriculums leading to an academic certificate. As a condition of eligibility, an institution must include among its major functions the provision of general education as defined in the *Manual*. An approved institution is not barred from offering curriculums terminating at the end of one, two, or three years if they are taught at the level of collegiate instruction. The curriculum should presuppose the completion of a secondary-school curriculum as a condition for entrance to the institution, or secondary courses should be so integrated with the curriculum of the institution itself as to guarantee the educational progress of students to a definite stage of advancement beyond the completion of the usual secondary-school offering. Before an institution will be considered for accreditment, it must have been in operation long enough to make possible an evaluation of its program.

The definition of general education appearing in the *Revised Manual of Accrediting* and referred to in the foregoing quotation reads as follows:

For purposes of accreditation the term "general education" signifies acquaintance with the major areas of knowledge; it implies possession of the facts in such areas and some proficiency in the modes of thought involved in understanding such facts. In its purposes and in its content it is a continuation

of the kind of education offered in the secondary schools. It excludes definite vocational preparation.

Over the years the Secretary's office has frequently received requests to be considered for accreditation from institutions of highly specialized type which were ineligible because they did not meet the general education requirement. In the opinion of the Committee, conditions are such that the Association should now assume some responsibility for accrediting specialized institutions. The growing social pressures not only give recognition to the need for such institutions in our society, but they also demand that there be an opportunity for them to establish their acceptability as institutions of higher education. We have long accepted the principle in American higher education that diversity makes for strength, and we have sought in all ways possible to encourage and protect the development of a wide variety of educational programs as essential in meeting the higher education needs of our youth. The specialized institution by its very nature makes a particularly significant contribution to the unique pattern we cherish. The North Central Association as a regional accrediting association should, therefore, recognize its social obligation in this respect and accept the responsibility for the identification of quality among these institutions.

The second problem arises when a member institution, usually granting the Bachelor's degree, extends its program to the next higher degree level in specialized fields rather than in the liberal arts. The determination of what constitutes sound preparation in highly specialized fields at the graduate level and of what kind of a faculty is required, as well as what resources are needed in terms of library and laboratory facilities, requires competencies not always possessed by those who serve as North Central Association examiners.

The Committee is convinced that ways must be developed to enable the Association to deal effectively with these problems and thus to discharge its responsibility to the public.

Statement of Policy on the Accreditation of Specialized Institutions and Programs

I. The Accreditation of Specialized Institutions

1. Eligible Specialized Institutions
   a. The institution must be organized on a not-for-profit basis and devoted to educational purposes. Those institutions whose control is proprietary will not be considered eligible.
   b. The institution must offer a program at the post-secondary school level. The institution should require the completion of a high-school course of study or its equivalent for admission to the program. It must include in its offerings a core of general education at the college level or arrange for the completion of such work in another accredited institution as part of its curricular requirements.
   c. The work offered in the specialized institution must be built upon and require for mastery the competencies gained at the high-school level. Institutions offering training in skills that can be acquired without regard for previous education are not eligible for accreditation even though they may require graduation from high school for admission.
2. Selection of Examiners

   The evaluation of the quality of a specialized institution presents particular problems to a general accrediting agency like the North Central Association. The adequacy of faculty, plant facilities, library, and the like will, of course, be determined in the light of the specific purposes of the institution, but valid judgments on the quality of many aspects of its program can be made only by those familiar with

the particular field of study. In the determination of the quality of a specialized institution, the North Central Association will seek the assistance of competent persons, where possible, through the appropriate professional association. Such persons, together with others experienced in the accreditation of higher institutions generally, will form a team of evaluators whose report will provide the basis on which the Commission on Colleges and Universities may reach a decision as to the action to be taken. The specialists so employed will be asked to act as representatives of the North Central Association rather than of any professional agency with which they are connected. Action on the accredited status of the institution by the North Central Association will be independent of action that may be taken by any other accrediting agency.

II. The Accreditation of Specialized Programs Within Member Institutions

Member institutions which extend their offerings from one degree level to the next higher level are subject to review by the Association. When such extensions are restricted to specialized professional fields the judgment of persons who are competent in the fields under review is essential to a sound evaluation. The Association will, therefore, seek the assistance of professionally competent persons, through the appropriate professional agencies where such exist. Such persons, together with others experienced in the accreditation of higher institutions generally, will form a team of evaluators whose report will provide the basis on which the Commission on Colleges and Universities may reach a decision as to the action to be taken. The specialists so employed will act as representatives of the North Central Association rather than of any professional agency with which they may be connected. Action on the accredited status of specialized programs by the North Central Association will be independent of action that may be taken by any other accrediting agency.

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ATHELSTAN F. SPILHAUS, *University of Minnesota, Minneapolis, Minnesota*

Research and the Curriculum in Colleges and Universities: The Sciences*

IT IS ALMOST TRITE to say that the research of today is the curriculum of tomorrow. The curriculum of *what* we teach must be composed of *what* we know; what we know today is the result of all our research. But the relationship between research and the curriculum is much more than this.

Good research demands high intellectual ability, disciplined devotion to scholarship, intellectual curiosity, and an appreciation of the value of learning for itself. The excellent research worker who is also a teacher communicates these qualities to the students even though the actual subject of his research may be outside of the curriculum. Thus it is important for colleges and universities, within the limits of their resources, to encourage a policy of melding research and teaching.

Students, too, even though learning fundamental and well-established subject matter, can be encouraged to develop self-learning habits by the example of a man who radiates the excitement of learning for oneself through research, whether it be high-level research on the frontiers of a field of natural science or bibliographic research for a student to dig out for himself work already done on a particular subject.

In the natural sciences and their applications, while the research work of a faculty is on diverse, highly specialized matters, if basic enough it cuts across fields and is to steer the curriculum away from specialization and toward the teaching of the fundamental sciences which enable an individual to read and understand many different specialized things on his own. Research affects curricula in another way too: in engineering today we teach what would have been called, and was, respectable physics yesterday. While the chemists, physicists, and mathematicians proceed to newer frontiers, the engineer absorbs and applies and continues the research on their discoveries of yesterday.

Thus, research in the natural sciences directly affects the curriculum in the applied sciences; but affects it in a direction so as to reduce the emphasis on application. Modern engineering teaching must include such things as solid state physics, communication theory, new materials resulting from chemical discoveries, and to treat these it must give up something. The tendency is to decrease the emphasis on current practice. So fast does technology advance that the teaching of current practice may waste the student's time on specific applications which are obsolete in terms of his future forty years of useful life.

Because research is so closely related to the curriculum and because any curriculum should be continually under scrutiny by the faculty, it is implicit that the faculty should have strength in research. This implies, too, that college administrators should have an appreciation of research that can be gained, except in unusual circumstances, only by having themselves

* An address delivered at a meeting of the Commission on Colleges and Universities, Thursday, March 27, 1958, in Chicago. This and the two which immediately follow form a series on the general topic "Research and the Curriculum."

been exposed at one time to the excitement, discipline, and disappointments of research. If they do not have this understanding, they attempt to direct, program, and schedule research, thus stultifying it. I am afraid too often in our colleges and universities the job of these administrators emphasizes financial matters, bricks and mortar, alumni and other public relations, feeding and housing, and other peripheral though important matters, where the first emphasis should be to help their colleagues toward discovery and good teaching. Those selected for these posts often either do not have the qualifications for scholastic leadership or, if they have, give in to the pressures of these other pragmatic considerations so that they do not exercise such leadership. Multitudinous duties are expected of a college or university administrator today; but if is a question of delegating, the job of keeping abreast of the developments in the various fields of knowledge, of keeping sufficiently aware of the research and other scholarly work of the faculty in order to make quality judgments between them, and of anticipating new interrelationships and borderline fields to explore, this job is the one that should be delegated last.

If a university is to be devoted to scholarship and the dissemination and discovery of truth, administrative officers that deal with the primary considerations—*who* is to teach and do research, *how* to select those who are to learn, and *what* to teach them—must themselves devote most of their time to these considerations and delegate to others, if necessary, the other essential but more "practical" activities. Only by constant working contact with teachers and research scholars can the influence of research on the curriculum be encouraged by the administrator to bear most fruit—not only in the development of borderline fields and of new interrelationships of basic science, but also in preserving a proper emphasis on "pure" studies versus "applied." Only by this contact can the administrator exert scholastic leadership which anticipates the future needs of the student in an intellectual society and not merely wait "to respond to public pressures."

So far I have only discussed the influence of university research on the curriculum; but there is also a great deal of excellent fundamental research now being carried out by industry and this, too, has a profound influence on our curricula in an indirect way. Before industry was research conscious it leaned toward the view that universities and colleges should turn out a product immediately useful in its particular specialized endeavors. This led to a professional vocationalism in colleges and universities not only in the applied sciences, but in other professional schools. But better business, large and small, now realizes that to keep pace with the explosive technological changes of today they must interest themselves in research. The leaders of industry and business must be able to look ahead just as must the better leaders in scholarship at universities. In consequence, we find an increasing percentage of broadly educated, imaginative people in positions of leadership in America's business. These people exert a profoundly good influence on university curricula because they no longer demand specialized training. In fact, they urge the universities to get away from vocational things and hue to basic courses in the natural sciences and in applied science. Furthermore, they urge us to include more and more of the humanities. They can help us to move in the directions in which thoughtful educators would like to go.

Although business and industry already contribute mightily to the support of all educational institutions through taxes, they add to this by outstanding fellowship programs, by gifts of special facilities of a far-sighted nature, when the university may have to spend its own funds on immediacies. They support visiting professorships so that distinguished men from other institutions or from overseas can be attracted. They do all these things

for both privately and publicly supported institutions. Those that criticize business's attitude toward education should remind themselves that it is free, competitive, American producers—industrial, business, and farming—who have built our country's economy to the point where we can afford the magnificent concept of schooling for all.

Far-sighted, well informed business men recognize, as do some scientists, that the rapid technological advance places emphasis on creativity and initiative in jobs at all levels; and consequently they feel that the broadest, most basic type of education on which to build is best for all, even for those who can only take it at a slower rate. Thus research and its impact on our national economy and increase in the technological nature of our society reaches not only the university and college curriculum, but right down into that of the schools.

In pointing out all the advantages of research to a curriculum it would be a mistake not to mention forces which work against curriculum improvement, forces which attempt to over-pattern, over-control, and stultify curriculum building for education for the future. I am deeply aware of the benefits that may accrue from systematic reviews and intercomparisons of colleges and universities by accrediting agencies. But such accreditation should attempt (as I think it does in most cases) to make quality judgments of people, both teachers and their products —the students—and not merely judge by the titles of courses, by the floor space available, or by the numbers of professors. If accrediting agencies accept their duty of quality discernment instead of the pseudo-scientific formula approach, then they too would be emphasizing quality of scholarship and placing other things in their proper, or secondary, position.

In this category of groups that influence curricula in undesirable directions must be placed associations in highly specialized fields of endeavor who press for specialized courses to fit people to meet, and only meet, their immediate current requirements. These are groups which have not yet seen, as have the better college administrators and more far-sighted business leaders, the tremendous advantage of bringing the mind of an educated man to bear on a problem which he has perhaps hitherto not met but which his broad training fits him to analyze and contribute to in original and imaginative ways, unhampered by too fierce a devotion to past and current practice.

Teaching and research must go forward completely interlocked. College administrators and leaders in imaginative business can each gain from the other in projecting the research of today into the curriculum of tomorrow. They can join, too, in making the sometimes difficult choice of what the college and university can do best and what can best be learned by working in life as a continual extension of the basic learning in schools and colleges. Only thus can be developed a course of learning throughout life—a true "curriculum vitae."

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Social Science Research and the Curriculum*

THE RELATIONSHIP between research and the curriculum is a more complex one for the social than for the natural sciences. It is more complex for a number of reasons which should be stated at the outset and faced realistically in any consideration of the curriculum of tomorrow.

PROBLEMS OF SOCIAL SCIENCES IN THE CURRICULUM

First, it is important to recognize that social science findings, unlike those of the natural sciences, generally include as objects of research, aspects of man, society, or culture in respect of which there are widespread, deep-rooted, sentimental, and emotional attitudes; and, frequently, also organized institutional interests prepared to resist any efforts to examine phenomena embodying values which they regard as "sacred"—values to which they are committed. The natural scientist, although he has had his troubles in the past, an observation documented by the mere mention of such names as Galileo or Tyco Brahe, is, in general, free to study what he pleases; and, within recently imposed security limits on some subjects, to report his findings with the expectation that they will be eagerly read both by an audience which seeks knowledge for its own sake and an audience which looks for the possibility of innovation, that is, technological advance. Society at large is receptive to natural science findings as harbingers of change in the form of technological advance. The American economy is in no small measure based on planned obsolescence which natural science findings help to effect; and society rewards the inventor. In such a context the flow of natural science research findings into the curriculum is a relatively smooth and uninterrupted one.

In contrast, the findings of social science research are likely to be resisted, and resented almost in proportion to the extent to which they may even suggest the prospect of social change. Studies of the United Nations and the Specialized Agencies may be branded as subversive and detrimental to Americanism; conclusions about the working of international trade may be regarded as dangerous to American industry or labor; findings on race differences and the dynamics of prejudice may be viewed with dismay as inimical to an established social order; and efforts to understand the behavior of juries may evoke Congressional prohibitions. Even though we can still remember the infamous Tennessee evolution trial, the Scopes case, it is the social science, and not the natural science, text books that are the targets of over-zealous defenders of the established order today.

In the debate about the inclusion of provision for support of the social sciences preliminary to the establishment of the National Science Foundation, the observation attributed to a Senator that this would be undesirable because there were already "too many short haired women and long haired men in the country" was by no means an isolated manifestation of the distrust and disrepute of the social sciences. Not only the social scientist but

* Presented at a meeting of the Commission on Colleges and Universities, March 27, 1958, at Chicago. This program provided information regarding certain areas of research and their importance for the curriculum.—EDITOR

the educator who is responsive to social science findings, risks becoming suspect or risks open opposition by various organized groups, including the professional patriotic organizations, some religious bodies, and investigating committees of the Congress and the forty-eight State legislatures. In such a context the flow of social science findings into the curriculum is beset with many difficulties.

Second, the task of utilizing the findings of social science in school curricula is made more difficult than necessary by obstructions created by social scientists themselves. Social scientists have often tended to admix value judgment and policy formulation with research findings. This has been more true of some fields than of others. Especially given to normative considerations and policy recommendations have been political science; subfields of economics concerned with the business cycle and international trade; sub-fields of sociology interested in social problems; and more recently sub-fields of anthropology intrigued with "action anthropology."

This admixture of science and policy, recently formally merged into a new framework of the "policy sciences"[1] by a number of prominent scholars, is easily understood. It may be viewed as a transitional confusion arising from the absence, as yet, of an adequate body of well defined fields of "social engineering"—fields in addition to such established areas as law, social work, and personnel administration. But understanding the confusion does not make the task of introducing social science research findings into the curriculum any easier. For the curriculum committee, the teacher and the text book writer are still often faced with the *potpourri* of results of research confounded with normative judgments and policy views and recommendations which are admittedly not the result of research, but rather of value orientations—the predelictions and biases of the authors. This is not the place to elaborate the distinction between "social science" and "social engineering." But it is essential to the realistic consideration of the problem before us to observe that this is a distinction that, fortunately, is being increasingly recognized in social science; and that, as it becomes more honored in execution, will greatly facilitate the flow of social science research findings into those portions of school curricula that are reserved for social science.

A third problem in the introduction of social science research into curricula is generated, in part, by the over-enthusiasm in some educational quarters for "general education" and, in part, by the mistaken identification of the writings of non-fiction writers—journalists, *literati*, reformers, and social philosophers with social science. The desire of educators to provide a general education has, in my judgment, often led to premature efforts to synthesize and integrate social science knowledge—often in areas where it was non-existent. And the willingness of the fringe *literati*, and sometimes social scientists themselves, to reach a quick and unverified generalization has fed the burning appetite of general educators. In consequence, much of what is labelled "social science" in general education today is a curious admixture of some social science research findings liberally sprinkled with large and variable doses of hasty and unwarranted generalizations. Ideal-type constructs designed as tools for research are treated as findings of research; hypotheses are transformed into conclusions; and "theories" include the plausible, the speculative, and the fanciful without benefit of empirical foundation. No one can deny the need for general education; but to be beguiled and mesmerized by the appeal of synthetic syntheses is not to be educated. An essential ingredient of a general education, too often missing, is the acknowledgement of ignorance where and when it exists.

[1] Lerner, Daniel and Lasswell, Harold D. (ed.), *The Policy Sciences: Recent Developments in Scope and Method*, Stanford, Stanford University Press, 1951.

Fourth, the findings of social science research appearing in the curriculum must be documented and validated as products of research. This is almost more important in the presentation of social science than of natural science findings, because social science concerns phenomena about which almost every person not only has some views, but also some "common sense" knowledge. Since the findings of social science are increasingly at variance with common sense, the superiority of scientific to common sense knowledge must be made clear. At this point the social sciences will undoubtedly continue to have a burden that the natural sciences fortunately escape. For physics findings on nuclear fission have no common sense counterparts with which to compete or which may impede their acceptance as valid knowledge. Particularly is this the case when a demonstration of fission can be presented to clinch the case.

In concluding these introductory observations I should like to be clear about two things to which I have referred. My references to normative judgments and policy formation and recommendations are not to be construed to mean that such material has no place in general education. On the contrary, they should undoubtedly have an important place in the curriculum—in ethics, religion, social philosophy, civics, or general survey courses, where they are recognized as such. My plea is that such materials not be confused with social science which they most assuredly are not. By properly identifying the normative as such, the student is put on notice that values are being presented that he must consider in the frame of his own value system. By keeping such value judgments out of the social sciences, or minimizing their inclusion, not only is the integrity of social science maintained, but the value judgments themselves are not given a false aura of validity by association with, or as presumed derivations of, "science."

Similarly, my impatience with premature and unwarranted generalization is not to be interpreted as intolerance with broad generalizations in an appropriate part of the curriculum. My point is that speculative generalizations should not be confused with social science, a confusion which, on the one hand, does injustice and damage to the social sciences; and on the other, tends to give to the generalizations an aura of validity which they do not possess.

What I am pleading for is that there be increased clarification among educators, as well as among social scientists, of social science as science—as distinguished from literature, polity, or philosophy. With such clarification I am convinced the findings of research in the social sciences would flow more readily and justifiedly into school curricula and serve a more useful and significant function in general education as well as in the education of the specialist.

RESEARCH DEVELOPMENTS

With these observations in mind, what are the areas of research in the social sciences which hold promise for the curricula of tomorrow?

First of all, with the increasing division of labor and specialization within the social sciences let me hasten to state that I cannot speak with equal competence for all of the social sciences. As a sociologist I can speak best for that field, but, even there, better for my own sub-field of interest—urbanism, demography, and human ecology. I shall attempt, however, to point to some of the more important research developments that hold promise for the curriculum of tomorrow in five of the social sciences—that is in addition to those in sociology, to research developments in social psychology, in economics, political science and cultural/social anthropology. My agreeing to this undertaking, I may say, was in no small measure based on the increasing availability of summaries of the state of these disciplines and research activities in them.[2]

[2] Foremost among these are the following which

In excluding history, education, and geography, I am assuming that the first two have a distinct status in the curriculum, the first usually through the humanities, and the second, through special facilities for training teachers to which it is not necessary to make special reference to educators; and that the latter is included as a natural science, except at those points where it converges with the interest of sociology in human ecology, namely, as manifest in human geography; and with economics as evident in economic geography.

In general, it should be recognized that with the possible exception of economics, research in the social sciences in any rigorous sense is a product of this century. Only relatively recently were the separate social sciences divorced from moral philosophy and global speculation, on the one hand, and reform movements or defense of the traditional order, on the other.[1] Each of the social sciences to which reference is made above has experienced its major development since the turn of the century; and its empirical research development largely after the first quarter of this century.

During the past three decades significant developments have occurred which have affected the character of most of social science research. These include the diffusion of the natural science conceptions of method; development of special quantitative methods for social research, including the sample survey, in addition to the general developments in statistics; increasing specialization not only between the separate social sciences but, also, in sub-areas within them; and increasing inter-disciplinary and cross-disciplinary researches, partly in compensation for the increased specialization. Moreover, within the past decade technological developments which produced the electronic computer have opened up new vistas of opportunity for quantitative analysis in the years ahead. Finally, it must be recognized that there is a great unevenness in the extent to which rigorous research is being conducted both among the social sciences and within them in their various sub-fields. In consequence, it must follow that there will be unevenness in the manifestation of social science research findings in school curricula.

Sociology.—Sociology has been subclassified into three broad areas apart from general theory and method which cuts across the entire discipline. These three sub-fields are social organization, social psychology, and human ecology and demography.

Of these sub-fields social organization is by far the broadest, especially if it is envisaged as encompassing the various specialisms such as the sociology of religion, educational sociology, political sociology, industrial sociology, urban and rural sociology, and the like. In this sub-area of sociology, research has especially proliferated in recent years in such specific fields as social stratification; industrial sociology, including the sociology of work; political sociology; medical sociology; and a sub-field which cuts across social-psycho-

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were heavily consulted in the preparation of this paper:

The UNESCO series, *Documentation in the Social Sciences*, especially:

Bendix, Reinhard and Lipset, Seymour M., *Political Sociology*, UNESCO, Paris, 1957.

Vining, Rutledge, *Economics in the United States of America*, UNESCO, Paris, 1956.

Waldo, Dwight, *Political Science in the United States of America*, UNESCO, Paris, 1956.

Zelterberg, Hans L. (ed.), *Sociology in the United States of America*, UNESCO, Paris, 1956.

Also the following:

Ellis, Howard S. (ed.), *A Survey of Contemporary Economics*, The American Economics Association, Blakiston Co., Philadelphia, 1948.

Gittler, Joe. B., *Review of Sociology: Analysis of a Decade*, Wiley and Sons, New York, 1957.

Hauser, P. M. and Duncan, O. D., *The Study of Population: An Inventory and Appraisal*, University of Chicago Press, Chicago, 1958 (forthcoming).

Lindzey, Gardner (ed.), *Handbook of Social Psychology* (2 vols.), Addison-Wesley, Cambridge, Mass., 1954.

Tax, Sol, *et al.*, *An Appraisal of Anthropology Today*, University of Chicago Press, Chicago, 1953.

[1] Wirth, Louis, "The Social Sciences," in Curti, Merle, *American Scholarship in the Twentieth Century*, Harvard University Press, Cambridge, 1953.

logical interests as well, the study of small groups.

By all means the most prolific and systematic research results are those accumulating in the study of the structure and dynamics of small groups—studies in social psychology as well as studies in social organization. Stimulated by ingenious methodological developments which have made it possible to quantify the various aspects of small group structure and dynamics including their population traits, characteristics of internal structure, and "syntality" traits (the characteristics of the behavior of the group as a whole), the effects of such variables as group size, the communication network, the nature of the group task, and the personalities of group members have been subjected to study with significant results. Moreover, the research in this area like that in the natural sciences is, through its additive character and replication, tending to become funded in a corpus of knowledge that may be expected to grow in a meaningful way.

Small group research, although satisfying in its rigor and cumulative character, is microcosmic and less exciting to those interested in the macrocosmic than the developments in political sociology. The task of political sociology has been defined as the comparison of the abstract and logical possibilities of decision-making, in the context of the status-structure of a society, with the actual decisions taken.[4] Research in this area, shared to some extent with political science, tends to be organized around class conflict and consensus, as one set of polarities; and bureaucracy and oligarchy, as another. Building on the insights and work of Max Weber and Robert Michels political sociologists are seeking to advance knowledge in their area of interest by means of more effective research methods than were available to the 19th and early 20th century students of these problems. Specific studies include those on voting, political participation, public opinion and attitudes, large scale organizations including "human relations" in industry, and leadership.

Small group research, political sociology, and social survey research are certainly the more lively and promising developments in research in social organization, but there is also a growing body of research materials in relatively new areas like industrial sociology, social stratification, and medical sociology, as well as the older ones of social pathology, marriage and the family, community study, and urban and rural sociology. Contributing to many sub-areas of social organization and to sociology in general have been the great advances in the use of the sample survey as means of research. Particularly worth observing and incorporating into the social science curriculum are the studies, as yet too few, which seek to test the hypotheses and theories of earlier thinkers and to reshape them as necessary on the basis of empirical observation.

Significant researches have been conducted in demography and human ecology which merit incorporation into the social science curricula. The research in these areas actually transcends the work in sociology, for the research in both demography[5] and human ecology[6] is cross-disciplinary in character.

In the area of "demographic analysis," demography conceived in a narrow sense,[7] some of the more significant studies include those using "cohort analysis" in the study of fertility, generation analysis of mortality, mortality in relation to morbidity, the estimation of current and future populations, studies of migration streams, and the analysis of labor force structure and dynamics. In the realm of "population studies" research into the relationship between population and other systems of variables, the more important research activities include the studies of

[4] Bendix and Lipset, *op. cit.*

[5] Hauser and Duncan, *op. cit.*, Ch. I.

[6] Duncan, O. D., "Human Ecology and Population Studies," in Hauser and Duncan, *op. cit.*

[7] Hauser and Duncan, *op. cit.*, Ch. I.

fertility in relation to social and psychological factors, studies of population structure and change in relation to economic development, studies of the effects of migration, and studies of demographic factors on urbanization.

The field of human ecological research in sociology is one which overlaps with interest in human geography, location theory in economics, and general ecology in biology. Earlier studies in human ecology, confined largely to the mapping and description of phenomena in space, are being enriched by comparative researches employing functional-structural analytical methods and delving into the factors and processes producing the spatial and temporal patterns in society. Studies in human ecology are greatly expanding knowledge about the metropolitan area as well as regional and functional units.

Research developments in social psychology will be separately considered in the section which follows, in which the developments in psychology as well as sociology are incorporated.

Social Psychology.—The status of social psychology including research developments have been notably summarized by Gardner Lindzey.[8] It is on this comprehensive and excellent symposium that I have drawn largely in the materials which follow.

Contemporary research in social psychology may be better comprehended and interpreted in relation to the systematic framework from which it flows. Several such systematic frameworks exist. The first, representing the continuation of an old tradition, is the stimuli-response framework. In recent developments, however, including "contiguity theory" on the one hand, and "reinforcement theory" on the other, more explicit hypotheses than those of the past have been formulated and tested regarding human interaction. Second, the framework of cognitive theory concerned both with whether and how cognition, considered as a "centrally initiated process of representative external and internal events,"[9] plays a role in behavior. Third, the framework of psychoanalytic theory has increasingly become one of the themes of social psychological research. Fourth, "field theory," with the designation and concept drawn from developments in physics, produces research based on the assumption that the characteristics of an event are a function of its relations to a system of events of which it is an element. Fifth, the framework of "role theory" utilizes as its conceptual units "*role*, the unit of culture; *position*, the unit of society, and *self*, the unit of personality."[10]

Empirical research in social psychology was vastly expanded during the war and post-war periods, and has produced a relatively large fund of findings which continue to press for curriculum recognition. The studies have been characterized by advances in method including experimentation, attitude measurement, systematic observational techniques, sociometric measurements, systematic interviews, the social survey and a number of specific developments, mathematical and statistical, of great value in social psychological research.

Fields of research activity in social psychology include those in which the individual is studied in a social context, of which those of greatest interest may be studies of social motivation, perception, and socialization. Another focus of social psychological research is that represented by group psychology and processes and products of interaction. This area overlaps, of course, with the "small group" research to which reference was made above. Some of the more significant studies deal with group problem solving, social structure, mass phenomena, and leadership.

Important researches have also emerged from "applied social psychology" with

[8] Gardner and Lindzey, *op. cit.*

[9] Scheerer, Martin, "Cognitive Theory," in Lindzey, *op. cit.*, p. 137.

[10] Sarbin, Theodore R., "Role Theory," in Lindzey, *ibid.*, p. 22.

significant findings for the social science curriculum, as well as that of general education. Among these are the studies of prejudice and technic relations, mass media of communication, industrial social psychology and the voting and political behavior representing a merger of interests with political science and political sociology.

Political Science. The consideration of research developments in political science was a relatively simple task because of the availability of *Political Science in the United States of America.*[11] Much of what follows is drawn from this UNESCO report.

Of the social sciences being considered, political science is probably the least advanced in its divorcement from its nineteenth century philosophical and value orientation. This is in part evidenced by the relatively great attention still paid to self-criticism, discussion of method, and debate about the place of values in the discipline.

On the other hand, there are a number of areas in political science in which increasingly effective empirical research is being conducted and impressive research findings are beginning to emerge. In general these are especially the areas where "behavioral science" imagery has penetrated and empirical research has achieved dominance over speculative thought. The areas which have been most affected by this development include, first of all, public opinion, voting and elections; but, also, although to a lesser extent, political parties, and pressure groups, international relations, and public administration. Studies in foreign and comparative government have been relatively little influenced by the development in behavioral science, while those concerned with public law, jurisprudence, and judicial affairs have been the least influenced.[12] The central foci of the behavioral approach to the study of politics have been "power," the "group," "decision-making," "political participation"; and lesser themes have involved the utilization of concepts such as "status," "role," "community," "elites," "symbols," and "communication." Comparative studies have also greatly increased in the postwar period.

Curiously enough, the acceleration of empirical research in political science has been accompanied by increasing concern with policy problems. The troubled postwar world has forced focus on the key issues of the day, the resolution of which may well mean the difference between extinction or survival. In combining the greater interest in empirical research with increased concern about contemporary political problems, sometimes in the same person (notably Lasswell), the political scientist is undoubtedly exacerbating the curriculum problem to which I referred above—the problem of distinguishing between social science research findings and their implications for policy, citizenship, or general education.

Much attention in political science is devoted to "theory," partly because of its close bond to nineteenth century political thought, and partly because "theory" as employed by the political scientist is, among other things, a vehicle for normative judgment and the transmission of value judgments. In the light of the position taken in my introductory remarks, much of what passes for "theory" in political science may more appropriately appear in school curricula in the courses concerned with the consideration of "values," including courses in general education, than in courses labeled "social science." This is certainly true of such "theory" as that concerned with the debate about world political systems, e.g., democracy vs. communism; civil rights; and liberalism vs. conservatism. The debates themselves, and much of what is mistakenly labeled "theory" in them, are data for social science research which should not be confused with the product of such research.

[11] Waldo, Dwight, *op. cit.*
[12] Waldo, Dwight, *op. cit.*, p. 23.

In the specific sub-areas of political science in which research holds promise the following are perhaps the most noteworthy. In international relations especially interesting are the increasing number of studies of international organizations, especially those utilizing the "behaviorial" approach. In foreign and comparative government the studies which are departing from the traditional consideration of structure and focusing more on process are especially germinal. The study of comparative government around such key concepts as "decision-making," "power," "ideology," and "political institutions" may provide new and fresh materials. The proliferation of "area studies" is another of the rapidly growing areas of political science. Necessarily cross-disciplinary "area studies" provide the political scientist with a useful focus and the resources of other social sciences in collaborative research. In the field of public administration earlier narrow research on specific problems of management has broadened to include the "behavioral science" approach on the one hand; and increased concern with policy matters on the other. Especially interesting may be the results of increased comparative studies in public administration. The most exciting of all of the expanded empirical research activity in political science is undoubtedly that, shared with sociology and social psychology, which is concerned with public opinion, voting behavior, politics, parties, and pressure groups. The results of the studies of these phenomena are earning an increasingly important place in the curriculum as social science, quite apart from their policy implications for the normative part of the curriculum.

Economics.—Economics is the oldest and the best established of the social sciences under consideration in this paper. Yet it shares with political science a large admixture of normative considerations in its study of economic behavior.

Vining in his review and interpretation of research in economics for UNESCO, on which this section is in part based, uses as his point of departure the definition of an economic problem as "a problem of choice among alternatives."[13] In his delineation of three types of choice problems he provides on the one hand a frame for the review of research developments in economics, and on the other, a basis for separating the science from the normative aspects of economics. The three types of choice problems to which he refers are: one, the choice of a means to achieve a particular end; two, the choice by individuals of their ends; three, the choice by a group or society of constraints and regulations which are to be imposed on their individual actions. He succinctly describes the third type of choice as necessitated by the second when the freedom of others to choose ends is also recognized. The second type of choice is interpreted as the subject matter of "classical" political economy.

The theoretical work of economists which has received the most attention in recent years has been that focusing on the first type of choice—the choice of means for a well defined end. In this realm the economist has been joined by the mathematician and statistician in developing theory and practice for decision-making. The developments in the "theory of games" and empirical researches employing this theory point to new areas of curriculum development. The studies in decision-making, developments in "operations research," and some aspects of the work in econometrics are especially noteworthy developments—developments with implications for the other social sciences which are also interested in decision-making as well as for economics.

Some of the research in econometrics and in decision-making is subjected to criticism by Vining because it confuses the means-ends problem with the problem of choosing ends—particularly those with social objectives of the type of concern to welfare economists. In elaborating on this

[13] Vining, Rutledge, *op. cit.*, p. 9.

confusion Vining is, in effect, also elaborating the desirability of separating the "scientific" from the "normative" in economics. The choice of constraints in the management of a society's affairs is not subject to solution by "theory of games" or linear programming. It involves value determinations, normative rather than instrumental judgments.

The great debate now in process about steps to be taken in respect of the present recession (1958) well illustrates the confusion between the choice of problems involved. For, although there is disagreement among economists about means by which a high level of economic activity is to be restored, it is evident that much of the disagreement reflects basic differences in values—more specifically basic differences in goals and in the choice of constraints. Economic research incorporated into social science curricula often requires careful screening to separate the normative from empirical research findings.

There has been a great increase in the flow of factual materials about the operation of the economy, largely from government sources, and, in consequence, a great acceleration in empirical research in economics in recent years.

Especially promising in contribution to the fund of social science knowledge are the increased number of empirical studies, including research in differential fluctuations and growth of economic activity, national income, industrial relations, labor, social security, international trade, prices, and agriculture. Recent research developments also are concerned with problems of economic development, arising from increased interest in the underdeveloped areas of the world; problems of location-theory; the interrelations of population and economic behavior; and, as a result of general developments in survey methodology, with family economic behavior including consumption, expenditures, savings and labor force participation. Finally, it should be noted that the empirical research in economics has probably, more than in any of the other major social science disciplines being considered, gone heavily quantitative, especially in the work of the econometricians and in the utilization of mathematical models in general. There can be little question that the mass of research findings becoming available in empirical economics will generate great pressure for curriculum changes in the years ahead.

Cultural/social anthropology.[14] Anthropology is in a federation of subfields with quite distinct specific interests—physical anthropology, archaelogy, linguistics, and cultural or social anthropology. Only the latter is considered here, because the other areas have perhaps closer affinities to the natural sciences or the humanities than to social science and because this assignment must be subject to some arbitrary restrictions. The availability of *An Appraisal of Anthropology Today*[15] has greatly facilitated the preparation of this section.

Cultural/social anthropology, as Kluckhohn has indicated, arises from "the investigation of regularities, variations and deviations in behavior."[16] Culture is used in two senses by the anthropologist: as "the logical construct in the mind of the anthropologist" and as "the norms internalized in individuals as manifested by patterned regularities in abstracted elements of their behavior." In these conceptions and their interrelation is found the basis for one of the most important research developments in social anthropology, namely, the study of the interrelations of culture, personality and behavior manifest in studies of "personality-in-culture," and of "cultural behavior."

The researches have demonstrated earlier general theses about the influence of culture on behavior. Not only are such behaviorisms as language, food habits, and etiquette largely a function of culture but, as the newer research is indicating, so also are many other aspects of behavior.[17] The

[14] Tax *et al.*, *op. cit.*, pp. 218 ff.
[15] *Ibid.*
[16] Kluckhohn, Clyde, "Culture and Behavior," in Lindzey, *op. cit.*, p. 924.
[17] *Ibid.*, p. 926.

influence of culture is being traced for example on such biological matters as tolerance to pain, rhythm of eating and evacuation, and psychosomatic disorders. Research also is being extended on the effect of culture on sexual behavior, motor habits, perception, cognition, affect, memory, abnormal behavior, evaluative behavior, child training behavior, and personality. As products of these types of investigation, knowledge has also been increased of universal behavior which transcends individual cultures.

Personality-in-culture studies have involved a shift in focus for the anthropologist from culture and society to the human personality. With the person as the center of the study of process the anthropologist has, in collaboration with psychologists, psychoanalysts and, to a lesser extent sociologists, thrown light both on the person as such, on "human nature," and on such processes as acculturation and social change.

Another type of study greatly stimulated by the exigencies of the war were investigations of "national character." Such research has, among other things, augmented comparative studies and given impetus to cross-disciplinary investigations.

Finally, note should be taken of "applied anthropology" as a major development during the war and post-war years. Applied or action anthropology, quite apart from its social engineering functions, is also being productive of research which merits attention.

While the above discussion refers largely to new research developments in social anthropology the work continues, of course, along more traditional lines as well.[18] Research activity has continued to add to knowledge about such topics as social structure and social organization, sex and age grading, kinship and marriage, status and stratification, economic, political and ritual relations, social control, and social change. In the pursuit of his studies, however, the anthropologist is increasingly turning to contemporary, literate and advanced, as distinguished from primitive and pre-literate societies, as objects of study. In consequence, the distinction between the social anthropologist and the sociologist becomes more difficult.

[18] Tax *et al.*, *op. cit.*

CONCLUDING OBSERVATIONS

The introduction of social science research findings into school curricula involves complex problems, in the main not shared by the natural sciences. These problems arise partly from the nature of social science subject matter; partly from the widespread confusion, even among educators and social scientists themselves, on the boundary lines between social science and non-fiction literary works on the one hand, and policy tracts on the other; and partly from the pressures created by the need for general education which has forced premature syntheses and generalization. Much of this confusion could be dissipated if the curriculum made provision for two distinct places for social science subject matter.

The first of the two places suggested should be courses labeled social science which are restricted to social science findings based on empirical research by professionally trained social scientists; and should exclude the non-fiction and policy literature, except perhaps as data for analysis not to be confused with the results of research. The second place is the general orientation course, or other courses properly labeled as courses in general education or ethics or religion or civics or citizenship or philosophy or literature; and not mislabeled as social science. Such a distinction I am convinced would have salutary consequences both for social science and for general education.

In the main body of the paper I have pointed, not comprehensively nor even in a balanced way, to some of the newer and more exciting areas in which research in the social sciences is most rapidly developing. In doing this I have necessarily been highly selective and have even excluded the consideration of entire disciplines in-

cluding history, geography, and education. In pointing to newer areas of research, I have omitted adequate reference to a number of the more established areas which have produced and are still producing important research findings.

By comparison with the natural sciences the findings of the social sciences are as yet relatively immature and scanty. Yet, small as may be the fund of social science knowledge, it contains much more than society is prepared to accept and digest; and, in consequence, much more than has yet been incorporated into the curriculum of the schools, either as social science or as general education. For example, what is known about juvenile delinquency and crime, racial differences and similarities, inter-group relations and prejudice, group and collective behavior, the role of pressure groups and Madison Avenue in government, industrial relations, international trade, and international relations and organization far transcends common-sense knowledge, and could serve as a basis for modification of public policy and action. But for the reasons indicated above, such knowledge is more likely to be considered as subversive than to be used for the planning of social change. And indeed it is subversive in the sense that it may point to the need for modification which means change in established attitudes or behaviors. Perhaps enough research has not yet been done on methods for the transmission of social science knowledge to the school curriculum as well as to the public at large.

The teacher of social science, and especially the teacher of the policy implications of social science findings in general education, is caught in the conflicting roles of the teacher as "priest" and as "prophet."[19] In one role the social science teacher plays an important part in the transmission and conservation of the social heritage; and, in the other, he points to the paths of change. This posture of the social science teacher is, of course, shared with all of the other school functionaries who have a hand in the determination and administration of the curriculum.

In concluding these observations, it is perhaps unnecessary to point to still another development that may further obstruct rather than accelerate the flow of social science research into the curriculum. I refer, of course, to the amazing series of unprecedented *non sequiturs* in the history of education in the United States attributable to the near hysteria induced by Sputnik I.

One of the widespread reactions to the Russian intrusion into space was the erroneous conclusion that the Russians beat us to it because of the deficiencies of American education. More specifically, it has been contended that the Russian success was a demonstration of the inadequacy of natural science training in our secondary schools and colleges. While it may be true that more rigorous training in our secondary schools, colleges, and universities is desirable, certainly the need for such change was not demonstrated by Sputnik. The nature and intensity of the American reaction to Sputnik, however, carries in it the danger that the natural science curriculum will be greatly expanded at the expense of the curricula both of the humanities and of the social sciences. Should this occur another catastrophic *non sequitur* will have been writ large into the history of American education. For, it would seem that the danger that man may be unable to control his technological advances and the very fear of the implications of the Sputniks, the Explorers, and Vanguard may lead United States education to accelerate education for science and technology at the expense of education which may help in the control of its achievements.

[19] Johnson, Earl S., *Theory and Practice in the Social Studies*, Macmillan, New York, 1956, pp. 30 ff.

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Teaching and Research in the History of Science*

I AM SOMEWHAT INTIMIDATED at finding myself, so the program says, representing the humanities in our discussion of "Research and the Curriculum." The humanities constitute a vast area, and with most of these important fields I have no familiarity whatsoever.

You will forgive me, then, if I confine myself to the field of historical study—for unlike some of my colleagues I consider history not a social science but a humanistic discipline—and you must allow me to talk to you about my own subject, the history of science. It will illustrate, I believe, the kind of work done in humanistic research and the relation that exists between research and teaching in these subjects.

Since the History of Science is one of the newest branches of historical study to win a place in the curriculum of our colleges and universities, and since therefore many of you may have had little occasion to see it at work, I should perhaps begin with a few general remarks about the field.

As an organized scholarly discipline it is not much more than fifty years old. Its recognition as a valid object of university instruction is more recent still. Unless I am greatly mistaken, the earliest established undergraduate course in the subject was one launched at Harvard not by an historian, but by a distinguished physiologist, Lawrence J. Henderson, soon after the end of the first World War. During the 1920s and 1930s there were other enterprising individuals who taught the history of science, some very successfully, in their universities. Such a course was given at Minnesota for many years; there was a famous one given at Columbia by Frederick Barry, a chemist; and the one offered until her retirement by Miss Dorothy Stimson, an historian, at Goucher College; and there must have been many others of which I am ignorant. But until 1941 there was only one man in America—one of the few persons anywhere—whom we should qualify as a full-time, professional specialist in the history of science: Professor George Sarton, the distinguished Belgian scholar who came to Harvard about 1920. Sarton did more than any other man to give the subject professional standing and to provide some of the basic research implements. He founded and edited the most distinguished journal in the field, *Isis*, which I am glad to say is still a going concern; he instituted an annual Critical Bibliography of publications in the history of science; he wrote widely and persuasively; and he offered courses on both the undergraduate and graduate levels. Harvard conferred the first Ph.D. in the subject in the 1930's. In 1941, the University of Wisconsin established the first separate Department of the History of Science. Reactivated after a hiatus caused by the Second World War, by the energy and learning of my confrère, Marshall Clagett, it has become, with the strong support of the Administration at Madison, a great center of research and teaching.

The last twelve years have seen a most rapid, indeed an almost explosive, development of the subject. At least a dozen distinguished universities have men on their faculties whose prime concern is

* As indicated by Mr. Guerlac, the history of science, an emergent field, has great significance for the curriculum. Delivered on March 27, 1958, at a meeting of the Commission on Colleges and Universities at Chicago.

teaching and research in the history of science. And in three or four of these institutions there is an active program of graduate training leading to the Ph.D. Since 1949 more than a baker's dozen of first-rate young people have received the Ph.D. from such institutions as Cornell, Harvard, and Wisconsin. Young though it is, the subject now has all the accoutrements of the older scholarly fields: it has its organized society, with more than 1,500 members, its specialized journals, its periodic international congresses, and even its honorific international academy. The philanthropic foundations have discovered this growing field and have been generous with fellowships and research grants. Even the National Science Foundation, which is primarily concerned to support the physical and biological sciences, has awarded fellowships to deserving historians of science and to graduate students. Just this past year the National Academy of Sciences–National Research Council has established a U. S. National Committee for the History and Philosophy of Science, to facilitate, as similar committees do in the other scientific fields, the international aspect of our work.

At this point you may well ask what all the fuss is about and what precisely it is that historians of science do. I think most persons in this field would agree that by *science* they mean chiefly the physical and natural sciences; and that they pay little attention to the social or behavioral sciences, so-called, though this should be, and probably will be, the next step.

Nor are we centrally concerned to any extent with the history of technology and invention; like the history of medicine, this is thought of as a cognate, but largely independent, discipline. We think of science, furthermore, in three related ways: as *a body of knowledge* about the natural world; as the *method of inquiry* by which this body of knowledge has been built up; and as the *human or social or professional activity* through which this knowledge has been acquired, disseminated, and steadily enriched and refined.

It is the central business of the historian of science to reconstruct the story of the acquisition of this knowledge, the refinement of its method or methods, and—perhaps above all—to study science as a human activity and learn how it arose, how it developed and expanded, and how it has influenced or been influenced by man's material, intellectual, and even spiritual aspirations. It is a humanistic study, as George Sarton liked to remind us, of the *only really cumulative and progressive intellectual activity* of man. But in all other respects the historian of science does not differ in his approach from the scholars who study the histories of other human endeavors for the light they throw on man, his failures and his accomplishments: the history of law or philosophy or art or literature or religion, for example.

Before discussing the research being carried on in the history of science, and the vast and complicated areas awaiting exploration, I should perhaps seek to justify—if only briefly and inadequately—the place of the history of science in the university curriculum. Some of you may have an uneasy feeling that perhaps this subject is an academic curiosity or an academic luxury that can serve the needs of only a few students. This is not the case. All of you will certainly accept the proposition that no young person should emerge into our scientific and technical twentieth century without an appreciation of what science is about, what it is that scientists really do, how they think and work, and how science came to exert this overwhelming influence on our modern life and thought. But what you may well ask is whether the history of science should do this job, or at least contribute to it in any fashion.

Your institutions may be more fortunate than my own in the quality of the science courses required by the non-scientific undergraduates, the so-called terminal courses in college science. But I suspect there is a rather general pattern that suggests that all is not too rosy, which is why there is so much experimentation with general science courses, general edu-

cation courses in science, and so on. I myself happen to believe that the solution lies in a root-and-branch recasting of the old introductory courses, so that they are not simply watered down versions of the standard pre-professional courses. I believe that the best way for a student to learn about science is to study science—a particular science. But the goal should be not to teach techniques or the latest so-called facts, but through the particular science to convey something like a genuine understanding of the scientific enterprise as a whole, its spirit, its methods, its manner of thinking and working. Some of the really fundamental problems ought to be raised and debated, and for this some exposure to the history and the philosophy of science ought to be included, as well as some discussion of the human and social impact of science. For various reasons, I prefer this solution to one which would make exclusive use of a history of science course to present the case for science to the non-scientist. But in certain circumstances it has been amply demonstrated that a good, and not too technical, course in the history of science can do a very effective job in conveying the scientific attitude, making clear the self-imposed limitations of science, and presenting science for what at its best it has always been: a rigorously self-disciplined, essentially modest, and open-ended business of ceaseless inquiry into nature, with its own aesthetic and intellectual rewards; in short, to emphasize the humanistic side of science. But this can best be done, I am convinced, *after* the student has taken the kind of rejuvenated course in a special science which I have described. But here is the difficulty: we simply do not have, certainly not in sufficient numbers, men or women, who have received—in addition to their specialized preparation—the kind of training in the history of science and the philosophy of science which is needed to give the requisite depth and breadth to these terminal science courses. Too many, skilled though they may be, are products of our intensely vocationalized undergraduate and graduate training in science. They cannot see the forest for the trees, and their own particular kind of tree at that. This leads me to my next point: the importance of some exposure to the history of science on the part of *science students*, both undergraduate and graduate.

It is appalling to me to contemplate the kind of highly trained, but half-educated, young persons we commonly turn out of our science programs. Many, to be sure, take up humble technical positions in our complex modern industry, where they can do much good and little damage. But many of them, let us not forget, remain in universities and colleges as teachers, often perforce as teachers on the elementary level. They are in the main totally inequipped to present science to the non-scientist in the manner I have described. In recent years I have taught quite a number of such young men and women after they have progressed quite far in their science programs. It is astonishing how little understanding of science such boys and girls possess, what misapprehensions they harbor, how naive they are about the logical and conceptual methods they learn by rote, and, above all, how ignorant they are about the great scientific tradition which should illuminate and inspire them. They are, I might add, totally inarticulate and inept when called upon to defend their subject, science, from the increasingly vocal, and often very adroit, critics and antagonists of science. For none of these critics can be convinced or persuaded by arguments which defend science only on the grounds that it amuses its devotees, gives them well-paid security (at least in industry), and sheds material benefits upon the world. The utilitarian argument for science, I need hardly add, has become ambiguous and double-edged. And it has never been a very good argument.

So one strong and compelling reason for teaching the history of science on both the undergraduate and graduate level is to make sure that the elementary teachers of science in our schools and colleges will have, not merely a technical proficiency in their subjects, but some genuine under-

standing of science in its human and humanistic dimension.

I have always believed that one of the chief educational experiences provided by the humanistic studies comes from confronting the student with examples of great and exceptional human accomplishment: in the political, the intellectual, and the moral spheres. This comprehension of greatness sets goals, gives standards of excellence, and provides some relief from the depressing spectacle of the current Human Comedy. I do not need to insist that a view of human greatness which leaves out—or turns into a mere wax-work symbol—a Galileo, a Newton, a Darwin, or an Einstein, gives a quite impoverished view of human culture and of the potentialities of the human mind and spirit.

But there is a more practical reason for trying to give some appreciation of greatness in his own field to the young science student. So vast is the number of science students in our graduate schools—so many, even, who expect to do creative work in the sciences—that it is a rare and privileged young person who can work intimately in the laboratory in close association with a really first-class investigator, let alone a really great and authentic genius. Yet, more often than not, this sort of close apprenticeship was the way men learned their scientific craft in the simpler and less complex age of a century ago. By working closely with some great scientific teacher, a Gauss, a Liebig, or a Claude Bernard, men learned the tactics and strategy of investigation at first hand and picked up also, more often than not, some insight into the history and the philosophy of science. It was thus that they acquired not only higher skills, but an awareness and an appreciation of the great tradition which they could and did pass on to others in the same fashion. It was a genuine laying-on-of-hands.

Today, graduate instruction in science is big business, mass production. Though there are certainly many more able investigators at work today than at any time in the past, they are so grievously outnumbered by the crowd of students that the old apprentice system (from which our system of graduate study is patently derived) has become in this sense unworkable.

I believe that the history of science can supply, at least at secondhand and vicariously, the missing ingredient. A critical reading of Galileo or Newton or Claude Bernard can bring the student into close rapport with a really first-rate mind at work, struggling with confusion and difficulty, and eventually, out of his own inner resources, reaching a viable solution. I see no reason why science students should not benefit from the close study of these men, carried on in small groups or seminars, just as the student of literature studies the writings of Shakespeare, of Milton, or of Dostoievsky.

It should not need repeating, though I'm afraid it often does, that really creative teaching in any field, especially on the graduate level, is inseparably connected with constant study and research. I need not insist that this is especially true in a field as new and unexplored, and as wide in its ramifications, as the history of science. Though much valuable research has been done, our ignorance—if you will allow the term—is almost encyclopedic. Much that passes for knowledge of the history of science in the introductory chapters of science books, in encyclopedia articles, and in the popular press is shallow, uninspired, and often downright misleading. But, by the same token, there are few historical fields of research that offer more rewards for painstaking, first-hand work. There is scarcely a single major figure, to say nothing of lesser ones, in the history of science of whom it can be said we have adequate information and deep understanding, and whose study is not full of daily surprises. You can understand the situation, perhaps, if I remind you that for many of these great figures there is still not a biography worthy of the name. For some crucial figures, like Newton for example, there is no modern critical edition of the collected works, and no publication of the collected corre-

spondence. One big task of the future is to prepare just such essential working material.

Today, research in this area is being carried on in most of the countries of the world, not solely, by any means, by professional historians of science, but by men and women of diverse background and varied linguistic and technical knowledge. There are historically minded scientists, mathematicians, and medical men; there are professors of philosophy or literature or history; there are trained classicists and medievalists, as well as experts in the Far Eastern and Middle Eastern cultures and languages. A high degree of specialization is of course the rule, and even the small number of professional historians of science, those who work in science museums or who teach the subject in our colleges and universities, are necessarily specialized when it comes to their own research.

The central business of the historian of science, as I have said, is to reconstruct the actual sequence of events in the growth of scientific thought in a particular branch, or related branches, of the physical and natural sciences. In this "mechanical" reconstruction we can distinguish at least two approaches: (1) the careful study of the internal technical factors in the rise of a science, the use made of antecedent knowledge, and the patterns of transmission, stimulus, and influence which led to certain important theories or discoveries; and (2) the social and cultural influence exerted upon the scientists of a particular period which affected the choice of problems and the manner of their solution. A good example is the recent book of Alexander Koyré, *From the Closed World to the Infinite Universe*, which throws into strong relief the philosophic and religious influences upon the thought of Isaac Newton. Other studies of equal significance have sought to investigate the influence which technology and social conditions in war and peace have often exerted upon the growth of science.

These are studies of science itself, and of the forces that determined its matter and its form and its methods. But there are two other wide areas where much work remains to be done, though promising beginnings have been made. The first is the study of the cultural effects of science, of what the success and example of the science of any period has meant for philosophy, religious belief, social thought or—as in the famous studies by Professor Marjorie Nicolson—for the literary imagination. And secondly there is an immense problem, where the historian of science must join hands with the social historian and the historians of medicine and technology. This is the vast assignment of studying the material effects of the application of scientific discoveries for useful purposes, a matter particularly crucial in the nineteenth and twentieth centuries.

Viewed from the point of view of chronology, research in the history of science covers an immense span of time. Yet is it fair to say that up to now our efforts have been concentrated largely on the early periods, i.e. on the growth of science before about 1800?

Greek science, where much of our scientific knowledge began, was perhaps the first area to receive the close attention of serious scholars. Towards the end of the nineteenth century, distinguished classicists began to give Greek science a closer scrutiny, and specialists like Paul Tannery in France and Sir Thomas Heath in England did a prodigious job in reconstructing the exact science, the mathematics and astronomy, of the Greek world.

Basic though this was, it produced nothing so astonishing as the discoveries made by scholars like Otto Neugebauer who have worked with Babylonian and Assyrian materials. From the clay tablets of these peoples came evidence of their extraordinary skill in mathematics and practical astronomy, long before the Greeks. Neugebauer and his disciples are at present moving into papyrology in an effort to dissentangle the Middle Eastern from the purely Classical elements in Hellenistic science. Already they have profoundly modified our opinions.

The scientific accomplishments of the

Middle Ages were long ignored except by an occasional student of early alchemy. With their positivistic prejudices, men in the nineteenth century hardly admitted that much that was useful for science could have been accomplished in this theologically-dominated age. Today we know better, and have come to realize that important medieval pioneers in physics—in statics, dynamics and cosmology especially—paved the way for Copernicus and Galileo. At present the study of medieval science is one of the most active and productive fields of historical investigation.

The great Scientific Revolution of Galileo's day has been re-examined in the light of these new discoveries, and we have come to realize how little we actually know about it, and how difficult it is to grasp how it came about. It is, and will long remain, our central problem; just as, for example, the Reformation is the chief concern of historians of protestantism.

The tendency of much recent work on the great Scientific Revolution has been to emphasize, indeed I think to overemphasize, the extra-scientific and philosophic influences on these early scientists. We hear a great deal, for example, about the Platonism of Galileo, the influence upon him of his medieval precursors, and much about the religious and mystical side of Newton's thought. I sense a turning of the tide, with more attention being paid to the central scientific factors, and to a re-examination of the role of technology and the contribution of the Renaissance artisan and craftsman, about whose influence we used to hear so much.

The study of scientific progress in Europe and America during the eighteenth century is being actively pursued by many investigators. We have recently seen appear the first exhaustive study of Benjamin Franklin as a scientist, and are beginning to understand something about the foundation of modern chemistry by Lavoisier and his precursors, a subject largely surrounded hitherto by ignorance and mythology.

A number of scholars have turned their attention also to studying the influence of science on the political and social reformers of the French enlightenment and on our own Founding Fathers—for example Thomas Jefferson. And we are beginning to investigate the links between eighteenth century science and the early industrial revolution, though we have scarcely begun to find answers to the most important questions that arise in this connection.

Devoted and sustained research must be continued in all the areas and periods I have mentioned. But the real work that lies before us is to study the science of the nineteenth century—and eventually of the early twentieth century—with the same care that has been devoted to earlier periods.

I can report only the beginnings of such work. A good deal has been written on obviously important figures like Charles Darwin and Louis Pasteur, but the history of nineteenth century biology has still to be written. This is also true for the physical sciences. There are few if any definitive studies of the leading figures, and needless to say we still await the scholar who will be equipped to dive headlong into the study of the great Second Revolution in physics which began in the 1890's and transformed not only physics, but our whole image of science and the grounds on which it rests. There is an immense amount still to be done.

I hope I have been able to convey something of the accomplishments that can already be credited to investigators in this exciting field and, even more, something of the sense of adventure and limitless opportunity that lie ahead of any researcher in this new and still largely unexplored field of historical investigation. But I shall be satisfied if I have convinced you that the man who tries to teach the subject, even on the elementary level, without carrying on his own research and keeping abreast of what his colleagues are doing, will be a confused and pathetic figure. In the new field of the history of science, research is the staff of life and the condition of creditable accomplishment as a teacher.

H. GLENN LUDLOW AND KENNETH BARKER, *The University of Michigan*

College Placement: Some Facts and Observations*

AS THE RECRUITMENT of able college teachers annually assumes a faster pace, the educational placement office in many doctoral degree granting institutions finds itself a busy center of contact. Numerous organizations and groups issue periodic reports on college supply and demand. Among these statements are those of the U. S. Office of Education, the National Education Association, and the American Council on Education. Although these data are interesting and valuable, it seems appropriate to summarize the college placement activity of one such office for the 1957–58 year.

The Bureau of Appointments and Occupational Information at The University of Michigan serves all graduate departments. Candidates for advanced degrees are encouraged to register with the Bureau and to establish there a set of personnel records. These dossiers are supplied by mail or shown to the many college presidents, deans, and departmental chairmen who regularly visit the office searching for qualified teachers in disciplines ranging from Anthropology to Zoology. Table I indicates the number of requests for college personnel, the number of candidates available and an index of supply for the period October 1, 1957, to September 30, 1958.

In the table I, the authors have used a simple index of supply—the ratio of supply to demand—to dramatize the degree of shortages or, in a few cases, overages.

Thus, with the exception of the fields of anthropology, history, and counseling services, the requests for personnel exceed the supply known to and readily available through the Bureau. Obviously, not all graduate students register with the placement office, but the percentage grows annually. Further, not all requests for college staff are channelled through the Bureau. However, an increasing proportion of prospective employers expect to have personnel records available in a central location, and to have the candidates themselves on hand for interviews.

Within these limitations, Table I shows certain outstanding facts:

(1) Altogether, 3,188 requests were received by mail, telephone, or personal contact.
(2) These requests are classifiable into 54 fields (exclusive of the three subtotals presented for Business, Education, and Student Personnel).
(3) In just three of the 54 areas were there more candidates than positions.
(4) Forty-three of the areas are associated with an index of supply of less than .50. Stated differently, the University of Michigan Bureau had less than half enough candidates to suggest in 80 per cent of the fields or disciplines.
(5) The index of supply ranges from .50 to 1.00 for only eight fields; namely, biological sciences, guidance and counseling, fine arts, geography, humanities and classics, industrial arts, music, and political science.
(6) The areas of most pronounced personnel shortages (index of .10 or less) appear to be accounting, chemistry, economics, elementary education, educational research, secondary education, engineering, home economics, journalism, mathematics-science combination, nursing and health, physical education (women), physics, social studies combinations, and miscellaneous.
(7) An index of .29 pertains for all fields, considering all 924 active registrants. Therefore, there were roughly one-fourth enough candidates for positions listed with the University placement office.

* There is universal concern about the seriousness of the outlook regarding both present and future supply of qualified college teachers. The Ludlow-Barker report is printed here under the assumption that it reflects comparable situations in the larger institutions in North Central territory.—EDITOR.

TABLE I

NUMBER OF REQUESTS FOR COLLEGE PERSONNEL, NUMBER OF CANDIDATES AVAILABLE AND INDEX OF SUPPLY FOR PERIOD OCTOBER 1, 1957 TO SEPTEMBER 30, 1958

Fields	Total No. of Requests	Candidates* Available	Index† of Supply
Administration (Presidents, Deans)	71	29	.41
Anthropology	3	7	2.33
Biological Sciences	112	58	.52
Business (Total)	194	27	.14
Accounting	25	1	.04
Accounting plus other areas	21	2	.10
Commercial	39	6	.15
Economics plus other areas	16	4	.25
Miscellaneous	93	14	.15
Chemistry	96	9	.09
Economics	60	4	.07
Education (Total)	614	121	.20
Critic Teachers (Lab. Schools)	127	19	.15
Director, Student Teaching	24	6	.25
Educational Psychology	73	16	.22
Elementary Education	123	7	.06
Guidance and Counseling	16	11	.69
History and Philosophy of Education	19	4	.21
Laboratory School Administration	8	2	.25
Methods	12	4	.33
Research	36	0	0
School Administration and Supervision	16	6	.38
Secondary	37	1	.03
Special Education	39	13	.33
Miscellaneous	84	32	.38
Engineering	66	2	.03
English	321	98	.31
Fine Arts	51	30	.59
Foreign Languages	90	44	.49
Geography	23	14	.61
Geology	11	3	.27
History	58	63	1.09
Home Economics	35	0	0
Humanities and Classics	10	9	.90
Industrial Arts	29	15	.52
Journalism	10	0	0
Library	39	13	.33
Mathematics	184	32	.17
Mathematics-Science Combination	30	2	.07
Music	193	161	.83
Nursing-Health	38	2	.05
Philosophy and Religion	22	5	.23
Physical Education (Men)	96	39	.41
Physical Education (Women)	148	8	.05
Physics	80	6	.08
Political Science	33	18	.55
Psychology	77	14	.18
Science (Combinations)	63	8	.13
Sociology	50	6	.12

* Number of candidates actively registered with the Bureau of Appointments. Obviously, there were graduate students and alumni available who had not established active personnel files in the Bureau.

† Index equals ratio of supply to demand. Thus, an index of less-than-one indicates a shortage of candidates; an index of more-than-one indicates a surplus of job candidates.

TABLE I (Continued)

Fields	Total No. of Requests	Candidates* Available	Index† of Supply
Social Studies (Combinations)	91	8	.09
Speech	83	29	.35
Student Personnel (Total)	95	40	.42
Deans of Men, Women and Students	23	8	.35
Counseling Services	15	24	1.60
Residence Hall Advisors	28	4	.14
Other Student Services	29	4	.14
Miscellaneous (All Fields)	12	0	0
Total (all fields)	3188	924	.29

Turning from the supply and demand picture by specific fields, a few findings are given relative to type of requesting institution, degree requirements, salary range, and academic rank.

Although Table II is mostly self-explanatory, a few observations are offered.

(1) Contrary to a fairly prevalent belief that educational placement offices are not contacted for the "bigger" jobs, one notes that the largest percentage of the demands for staff came from state colleges and universities. This in no way negates the fact that many excellent position vacancies existed among ranks of private colleges and universities and teachers colleges.

(2) Another finding suggests that college administrators are beginning to settle for less formal education. Actually, 34 per cent were searching for masters' degree personnel; another 20 per cent were happy to uncover a qualified masters' plus.

(3) Disregarding the one-third of the institutions which did not list salary ranges, the median salary range extended for the academic year was $5,001–5,500. Incidentally, the median salary range offered last year was approximately $4,501–5,000. More college employers were pointing out sources of supplementary income as well; for example, summer school and extension teaching.

(4) Only one-half of the requests mentioned rank. Thirty-four per cent were seeking instructional personnel at the beginning levels. However, more than one out of ten were interested in tenure-rank and administrative personnel.

The foregoing analysis of our college placement operation for the past year helps clarify the focal position similar agencies occupy. College administrators are increasingly turning to placement offices in large universities as a point of con-

TABLE II

NUMBER AND PERCENTAGE OF REQUESTS BY TYPE OF INSTITUTION, DEGREES REQUIRED, SALARIES OFFERED AND ACADEMIC RANK

	Number of Requests	Per Cent
TYPE OF INSTITUTION		
Teachers Colleges	511	16
Private colleges and universities	945	30
Technical schools	40	1
State colleges and universities	1444	45
Private junior colleges	39	1
Public junior colleges	184	6
Other	25	1
DEGREE REQUIRED		
A.B.	106	3
M.A.	1068	34
M.A.+	643	20
Ph.D.	753	24
Not Stated	618	19
SALARY RANGE		
Under $3500	23	1
$3501–4000	112	4
$4001–4500	229	7
$4501–5000	375	12
$5001–5500	405	13
$5501–6000	518	16
Over $6000	461	14
Not Stated	1065	33
RANK		
Instructor	319	10
Instructor or Assistant Professor	280	9
Assistant Professor	497	15
Assistant or Associate Professor	122	4
Associate Professor	129	4
Professor	83	3
Department Head (also academic deans, presidents)	137	4
Not Stated	1621	51

tact for personnel information, interview arrangements, and recommendations. They are beginning to follow the well-established recruiting practices (the good ones, of course!) long adhered to by industry, business, and governmental agencies.

Earlier notification of personnel needs, carefully defined criteria and qualifications, proper and timely interview arrangements, are all making it possible for college placement officers to render worthwhile assistance. Although placement officials cannot pull Ph.D.'s out of a vacuum, their knowledge of candidates and graduate programs can ease the horrendous burden of college employers. At least, placement personnel are helping in the more efficient distribution of the available manpower—or, as we prefer, "profpower."

Conferences Conducted by the Commission on Secondary Schools at the Sixty-Third Annual Meeting of the Association in Chicago, March 24-28, 1958

THE QUARTERLY for October, 1958, carried a fourteen-page account of the conferences, discussion groups, and "buzz" sessions conducted by the Commission on Secondary Schools of the sixty-third Annual meeting of the Association, with the promise that comparable assemblies held by the Commission on Secondary Schools would appear in a later issue. The following array of reports fulfills that promise.

For several years these two Commissions at the annual assemblies have been turning more and more toward such "action" meetings and away from the more formal larger sessions of a former period. As mentioned in the October report, the large attendance at many of these sessions attested the interest in the topics discussed. As the reader will see, stylistically speaking these reports are not uniform. Each recorder reported in his own way the essential points as he saw them:

TUESDAY, MARCH 25, 1958

General Chairman: William F. Carlson, Principal, Northfield Junior-Senior High School, Northfield, Minnesota.

CONFERENCE NO. 1

TOPIC: *How far should the secondary school go in its responsibilities to students in teaching sciences and mathematics?*

Chairman: Leon Olson, Principal, Williston High School, Williston, North Dakota.

Recorder: Theodore Sundquist, Principal, Trenton High School, Trenton, Michigan.

Panel Members: Wyley Elliott, Principal, Camden High School, Camden, Arkansas; Nelson L. Haggerson, Cobre High School, Bayard, New Mexico.

A statement by Nelson Haggerson raised the questions: Should we upgrade mathematics and science courses? What about our teacher preparation?

Wyley Elliott stated that public reaction to education was like the action of razor-back hogs, trained to come to feed by a rap of an axe handle on the trough, but scattering widely when woodpeckers peck on the trough. This was used as an illustration of an alarmed public as a result of sputnik. As a consequence, we are striving to grasp some quick and miraculous methods to train better mathematics and science students.

Reference was made to a newspaper quote that "schools are charged with doing everything, but doing nothing well."

We should check the content of our courses and strive to do better in all fields. Better guidance is needed in the selection of courses to avoid an excessive selection of electives. In the matter of upgrading our courses in mathematics and science, how far should we upgrade and possibly in some instances downgrade?

Nelson Haggerson asked: What trends are you following in your math programs? What are you doing in your schools about the math programs?

Chairman Leon Olson asked: Should some steps in mathematics be dropped—for instance, throw out logarithms?

Arthur Nelson, Principal of Central High School, Omaha, Nebraska, observed that it might be possible for some high schools to teach college freshman mathematics better than some colleges. This would be due to the quality of teachers, particularly teachers in our larger high schools, who have had wide teaching experience.

The comment of one observer was that we need not get excited over all this fuss about our position in the race for outer space, but we should be ready to stand up and be counted for what we have done in education. Some people fear that we have lost our world leadership in scientific endeavor. As a matter of fact, we have never had that position; nevertheless, we have done a mighty fine job of teaching American youth "know how." Our youth know how to take an abstract fact and put it to practical use.

Some of the foremost thinkers in education feel that European education has failed, whereas American education has taught us not to lose sight of the "common touch" which is important in our system.

Educating the gifted child may mean less education for the common herd. This we cannot allow.

Lou Adolfson, Principal of Albert Lea High School, Albert Lea, Minnesota, made the following comments:

> Whenever there is a sign of weakness, we look for a scapegoat. The American Educational System is now such a scapegoat.
>
> We must stop to analyze how many of our students are of non-college type. There is a larger percent than we realize. Some students who have college potential are grouped out for disciplinary reasons.
>
> Do we really understand the philosophy of science? Do we understand such things as scientific inquiry, problem-solving, etc., as we should?
>
> Has our teaching been more of the directive type compared to the non-directive type from which we might get better results?

Wyley Elliott stated that better guidance was needed to challenge our students. Someone must decide the course requirements.

It was suggested that perhaps the dean of Purdue's engineering school might put us right about mathematics requirements. About one-third of Purdue's freshman mathematics students are poorly prepared. We should offer four years of good high school mathematics for engineering.

Bill Sheals, representative of the Dependent Schools of Puerto Rico, stated that we believe in local control of schools, yet colleges dictate the program. Where and who should decide the program?

Some schools in the Chicago area offer algebra in the eighth grade. A Lane Technical High School math instructor says that his school is able to offer additional courses by giving plane and solid geometry as one course. Puerto Rico has plans for using this telescopic plan. Chicago is setting up a graduation requirement of one year of mathematics and two years of science—or two years of mathematics and one year of science.

A woman representative from New Mexico told of the program in Los Alamos where in an experiment made at the eighth-grade level some students were given algebra and some were given general eighth-grade mathematics. It was observed that those who took the algebra course were as strong, or stronger, students than those who took the eighth-grade mathematics.

A representative of Nebraska asked if we spread out our program of mathematics and science, how about the quality? Are we doing enough with our home assignments?

In Terre Haute, Indiana, the principal reports that there is a great increase in the enrollment in mathematics and science courses.

In some places the mathematics program is being telescoped to allow the offering of a full year of college algebra. There has been pressure from students for advanced math courses to be included in the program. (This raises the question of adequate high school texts for students in the first year college mathematics.) There have also been requests for advanced courses in physics and English. Where are we to get teachers for these advanced courses?

The principal at Skokie, Illinois, told about a science seminar offered in his community on a twelve-month basis which is conducted by specialist teachers from industry and business. This is offered on a voluntary basis. The teachers

contribute their time, there is no text, and the industrial laboratories are used. The course is non-credit. Inquires are welcome; material or pamphlets are available.

Mr. Welch, of Kansas, asked what functions are left for the college. Are we taking over their functions?

CONFERENCE NO. 2

TOPIC: *How can students be grouped to provide the most effective instruction?*
Chairman: Willard McKinny, Principal, Faribault High School, Faribault, Minnesota
Recorder: Donald G. Moline, Principal, Owatonna High School, Owatonna, Minnesota
Panel Members: Lyle M. Kingery, Principal, Centennial High School, Pueblo, Colorado; William C. Lovett, Principal, Flowing Wells High School, Tucson, Arizona

The chairman reported that the high school at Faribault, Minnesota, has been grouping students for seventeen years in grades seven through twelve in all but the vocational subjects. The number of groups was reduced in recent years from five to three. Students are selected for the different groups on the basis of achievement tests, intelligence tests, marks and teachers' recommendations. Principal McKinny stated that there has been favorable acceptance of the plan by faculty, administrators, and the community.

Animated discussion from the floor followed the brief presentation given by panel members. The most commonly used plan of grouping appeared to be in college preparatory classes in English in the upper grades, particularly in eleven and twelve. Grouping was utilized least frequently in the social studies. Natural grouping generally occurred in the higher mathematics and science courses because of the nature of the subject matter.

Division into three groups seemed to be the most prevalent procedure where grouping was practiced. Criteria for grouping mentioned most frequently were intelligence tests, achievement tests, marks, and teachers' judgments. A few schools were sectioning students on the basis of reading achievement only. One of these was located at Joplin, Missouri. Less than a half-dozen of the two hundred high schools represented were grouping the extremely gifted, those defined as ranking in the upper 2 percent of the school population. Colorado Springs has had such a group this past year in social studies and English at the senior level. The program will be extended next year to include several subjects for students in grades ten through twelve.

Six schools represented were granting differentiated diplomas. They were Colorado Springs, Colorado; Marietta, Ohio; Rockwell City, Iowa; East Chicago, Indiana, and Cabool, Missouri.

A great deal of interest was evidenced in this topic of grouping. The session concluded on the note that in order to provide the most effective instruction the North Central Association should initiate research studies on the grouping of students.

CONFERENCE NO. 3

TOPIC: *How can the student council be most helpful to the principal in problems of administration?*
Chairman: W. L. Whiting, Principal, Lincoln High School, Green River, Wyoming
Recorder: U. H. Budd, Principal, Junior-Senior High School, Wellington, Kansas
Panel Member: Judson S. Erne, Principal, Columbus High School, Columbus, Indiana

Mr. Erne opened the discussion by stating that in his school the assistant principal sponsors the council and that the homeroom representatives elect its members. The council does not exercise "too much" authority, but is primarily advisary—a sounding board—discussing matters coming from the faculty advisory group. The council plans student affairs, runs club programs and student activities, and originated a request to parents to formulate a uniform code of student conduct.

Most of the discussion from the floor pertained to the place of the council—and its effectiveness—in relation to student conduct. Mr. W. B. Neece of Fulton, Illinois, stated that in his school the council has been working on a code but the problems of persuading the students to accept and observe it remains. Mr. M. D. Morris,

of Newton, Kansas indicated that a code had been prepared and sent to parents for their signed approval. As for a student court, Mr. Whiting said that at Green River the students are not compelled to submit to the student court; but if they do not, they are referred to the principal. The court advises, but does not impose penalties.

Sr. Mary Aquinas, of Mount Pleasant, Michigan, indicated that, at Sacred Heart Academy, the court on one occasion imposed a two-week suspension on a basketball player, and that the action was effective.

At Crown Point, Indiana, Warren Garner stated that the court acts primarily as a safe-driving body. Infractions are punished by suspending permission to drive to school. In this regard, Billy F. Day, of Wilson, Oklahoma, said that students guilty of safe-driving rules must deposit their keys in the morning and call for them in the evening. Mr. H. P. Harrison, of Lawrenceburg, Indiana, commented upon the inability of the school to control the parking of students' cars elsewhere than around the school. City regulations are then binding—a legal matter.

At Columbus High School, Mr. Erne observed that a "poor citizenship list" is maintained. If the Council posts any name on this list, the student in question becomes ineligible for any school activity.

Mr. Lloyd Frazier, of Cambridge City, Indiana, mentioned that no students are permitted to drive automobiles within the school day. Citizens cooperated by reporting any violations. At the beginning, a few students were suspended.

At Tulsa, Oklahoma, said Mr. McCafferty, seven or eight schools are represented on a "Youth Traffic Court"—a cooperative plan with local authorities for traffic control. Mr. Whiting indicated that his school has been rather successful so far in experimenting with a student court in controlling conduct in halls, smoking in rest rooms, and the like. As for his student council, it selects assembly programs, among other functions, and the president of the council presides at these convocations.

The session closed with the discussion of qualifications for council membership. There was a difference of opinion whether academic standards should control eligibility. The idea that students should not be prevented from participating because of inferior achievement due to low ability had considerable support.

CONFERENCE NO. 4

TOPIC: *What are some of the most effective ways of interpreting the program and activities of the secondary school to the community?*

Chairman: Barrett Vorce, Principal, Lee M. Thurston High School, Detroit, Michigan

Recorder: Royal B. Everill, Principal, Beloit High School, Beloit, Wisconsin

Panel Members: Kenneth Pedersen, Principal, Hibbing High School, Hibbing Minnesota; Hiram Alexander, Principal, Edison Junior-Senior High School, Tulsa, Oklahoma

In his introduction, Mr. Vorce indicated that many critics of the secondary schools have developed their point of view because of lack of knowledge of the objectives and procedures of the secondary schools. Six false attitudes have gained strength, principally because secondary school people have not told their story well. They are the concepts that:

1. The school teacher is an object of charity.
2. Schools indulge in frills that waste time and money.
3. Schools are frankly seeking charity when they ask for money.
4. Administrators are inefficient.
5. Teachers are self-seeking, rather than servants of the taxpayer.
6. When school administrators require additional funds for building, etc., they cannot be wholly trusted.

Mr. Pedersen commented on the procedures used in Hibbing to improve public understanding of the school program. In the 1940's school officials began to realize that the public, and particularly the large taxpayers—the iron mining companies—were unsympathetic to school needs because basically they knew very little about

the school program. To bring about better understanding and appreciation, they:

1. Formed a "Know Your School Forum," which consisted of monthly meetings to which various organizations in the community were asked to send representatives to discuss school problems, practices, procedures, needs, etc. One topic was discussed at each meeting, the topic being chosen in advance, and properly publicized. The meetings were held in the afternoon. Thirty minutes were allotted to presentation of the topic, and then opportunity was given for questions and answers. Typical discussions dealt with such topics as: "The School Health Program," "Can Hibbing Graduates Go to the Better Colleges?" Attendance over the years has averaged about 65 people.

2. Arranged regular meetings with the large taxpayers to increase understanding of the school program. These meetings are largely informational in nature. Few teachers attend either type of meeting because of the time of the meetings. Administrators take the responsibility.

3. Organized P.T.S.'s for each building. They render strong service in interpretation of the school program.

Neither of these groups has policy-making responsibilities, but when they make recommendations, they are based upon understanding, appreciation, and willingness to meet the expense. This is important because the mining companies pay 85 percent of the taxes, and they can control legislation at the state level. Since the procedures have been in operation, community cooperation has improved, salaries have been raised, buildings are better, and there is active cooperation by all, leading to the improvement of the whole school program.

Mr. Alexander, of Tulsa, next presented his viewpoint on efforts in Tulsa to inform the public concerning the objectives and program of the schools. Their basic philosophy includes parental cooperation in all aspects of school work. Parents are:

1. Encouraged to visit schools, the classes, the teachers, and the administrators.

2. Asked to meet with the counselors of their tenth-grade children for a two-hour interview with the child concerning his educational and vocational aptitudes and plans.

Other successful features are:

1. Keeping teachers well informed about school policies and decisions. Teachers are excellent interpreters of the program. When well informed, they also do a better job of teaching.

2. Forums, held once a month, to provide speakers for the classes in American History. The citizens seem enthusiastic about the greater understanding of the American way of life which the program engenders.

3. Business-Education and Education-Business days, sponsored by the Chamber of Commerce.

4. P.T.A. programs. Once a month the superintendent meets with P.T.A. representatives for a 30-minute question-and-answer period, who then report back to their respective P.T.A.'s.

5. School studies, such as the report card system. Lay people, including critics, were asked to study this and other problems. They learned a lot, and sold many people on the accepted practices of the school.

6. TV programs three times a week.

7. The superintendent's letter that goes out with the report cards, explaining certain phases of the program of the schools.

8. Teachers' meetings to keep teachers well informed about school activities.

During the general discussion period which followed, many comments were made relative to successful policies and practices in various communities.

1. The student council has prepared materials for parents and for printing in the local papers. Student council members also sit on many school committees to present the student point of view. A caution was expressed that students should not be given responsibility beyond their capabilities—that school people are professionals, and must take professional responsibility.

2. School men are often too timid to exercise the leadership of which they are capable. Too often they ask what the people want, when basically, as professionally trained people, they should tell the public what is needed. The present generation is better educated than any preceding generation.

3. One school has assigned a special staff member to devote a portion of his time to public relations—informing the papers, TV, radio, parents, pupils, and community groups about the school program. Cooperative planning with some of these groups is encouraged in this school.

4. It is important that the public understand that our American educational system is committed to the education of the masses, not just the academically select, and that we are continually trying to up-grade our standards. Information—and lots of it—is necessary to offset the popular idea that standards are being lowered. Out of this question, in rapid order, came the following suggestions for keeping the public informed:

a. Get competent speakers from the state university, for instance, to interpret the schools to the people of the community.
b. Print a transcript on the back of the diploma; it will tell what a diploma means, standards of achievement, etc.
c. Inform the community about the methods of grouping pupils. Bring into the open that there are different levels of ability. Don't hide this fact.
d. Frequent parent-discussion groups are a good method of keeping them informed. Hold them often enough so that the groups do not become large. When the group is large, then somebody tells them, instead of developing a discussion. That is not good.
e. Schedule parent conferences—this is one of the best methods, because it brings many parents into the school.
f. Hold TV programs weekly. Put the director of curriculum, the superintendent, the principal, and others on the spot to discuss any or all problems.
g. Arrange parent institutes once a year to discuss problems. School should be closed for a day, with parents encouraged to come instead of their children for these discussions.
h. Many thought that diplomas should not be given for low standard work. A diploma should represent fairly high academic standards. If this were done, then it would be possible more effectively to adapt the work to the pupil. There could be release from required classes for those who are not able to do the work. They could be put into trade classes, etc., where they might succeed.
i. Use the school newspaper as a vehicle of public relations. An issue or two a year might be devoted to the school program, with shorter articles at other times. Use the paper to spotlight special problems and issues.
j. One local newspaper provides a page a week for school problems.
k. A "teen" page in the local paper may give pupils a chance to talk about their own problems.
l. Have the high school principal talk to community groups.
m. Send commendatory letters to parents of pupils who have done something well. This is especially effective.
n. Provide progress reports for parents on a pupil's work. These reports may show need for improvement, actual improvement, need for special kind of help, unsatisfactory work, etc.
o. Organize a "bookworm" club—a group to which no pupil can belong until he has reported on at least three books, and has passed a very rigid examination on how well he has read the books. Such groups might publish a paper of their work occasionally.

CONFERENCE NO. 5

TOPIC: *How may a secondary school make its system of reporting pupil achievement most accurate and meaningful to parents?*

Chairman: Charles Ritchie, Consultant, State Department of Education, Charleston, West Virginia

Recorder: Gail Shannon, Professor of Education, University of Oklahoma, Norman, Oklahoma

Panel Members: Ben Rossow, Assistant Principal, Sioux Falls High School, Sioux Falls, South Dakota; Donald Field, Principal, Logan High School, La Crosse, Wisconsin

The chairman opened the discussion by saying that the collecting and reporting of information about achievement is a complicated process. Research shows that reporting must be both cooperative and accumulative. The attitude of the teacher is a significant factor. School marks are accepted as the standard means of reporting accomplishment, but that there is a demand for more inclusive information about achievement, also. Constructive criticism should become a part of reporting progress.

Mr. Field urged the use of P.T.A. meetings to promote parent-teacher con-

ferences. He raised the question whether marks mean different things for various ability groups.

Elementary schools, said Mr. Rossow, have made greater progress in their reporting procedures than have high schools. Subjective factors complicate the development of qualitative evaluations. He went on to say that a differentiated curriculum calls for a scale of honor points to fit the marks given in each division. He referred to an article by Irving Stout and Grace Langdon in the *Nations Schools* for August 1957. "What Parents Want to Know About Their Child's School," the point being that present marking systems are not appropriate for the present-day philosophy of education for all American youth. Very few schools provide for parent-teacher conferences on the high-school level.

From the audience:

The student must understand the teachers' methods of evaluating progress.

Personal and social evaluation should be part of the report. A 9-factor scale to rate development has proved its worth.

* * *

The school is responsible for a realistic interpretation of achievement. Proper emphasis upon parent-teacher pupil conferences has promoted astonishing attendance if not overdone.

* * *

The report can be refined in various ways: by marking scholastic achievement, work habits, co-operation, and the like.

* * *

There is need for standardization of reporting procedures. The North Central Association should take the leadership in developing better standards for reports to parents.

THURSDAY MARCH 27, 1958

General Chairman: Delmer H. Battrick, Principal, Theodore Roosevelt High School, Des Moines, Iowa.

CONFERENCE NO. 1

TOPIC: *How may the senior high school counseling program assume more responsibility for vocational guidance as it applies to gifted students?*

NOTE: No report was received for publication.—EDITOR.

CONFERENCE NO. 2

TOPIC: *What steps should be taken to further emphasize science education in the high school, and at the same time maintain a balance in curriculum offerings of the comprehensive high school?*

Chairman: Stanford C. Witter, Superintendent of Public Schools, Lead, South Dakota.

Recorder: In the absence of the designated recorder, the chairman submitted the following account.

Panel Members: Louis J. Adolphson, Principal, Albert Lea High School, Albert Lea, Minnesota; C. O. McDonald, Principal, Hazelwood High School, St. Louis, Missouri; Clyde Rothgeb, Principal, Hays High School, Hays, Kansas.

MR. MCDONALD:

When considering the subject for discussion by this panel "emphasizing science" yet maintaining a balance of curricular offerings in the comprehensive high school, the first thought I have is—Why emphasize science?

There are two reasons that occur to me why we should emphasize science. First, no one can deny that in the recent years there have been tremendous advances in technology. These advances affect the daily lives of each individual. Therefore it is evident that we should emphasize science as general education for the welfare of all. Then, too, it appears that some foreign countries have made greater studies recently than have we. So something must be done in the field of public education to fulfill our national needs. Can we do both of these in a comprehensive high school? I think we can—however, there are certain dangers involved. In high school, particularly public high schools, when we emphasize one area there is a tendency for other areas to suffer budgetwise. Also in educating American youth we cannot put all of our eggs in one basket. We are dedicated to educating the entire individual rather than one facet of an individual. How may we accomplish some of the above objectives? In the matter of general education one of the most powerful incentives for pupils to enroll in science courses is to meet graduation requirements, either set up on the local or the state level. It is surprising how many states do not require some credit in sci-

ence for high school graduation. The influence of a very successful, talented science teacher in a school is another incentive for pupils to enroll in science courses. I realize that these are difficult to find; however they are a moving force when they can be employed.

In consideration of national needs in the matter of science, there is a question in my mind if scientists are needed, or good technicians. To me a scientist represents an individual with a creative mind—able to do original thinking. There are few of these individuals in our schools. The technicians are more easily trained. What are some of the means and innovations that we may use to challenge all youth and particularly the more able? Within recent years the multiple-track program has become popular and is proving to be quite effective. The tracks are set up according to ability or by curricula. Through the track system the entire school program is emphasized for pupils on the various tracks. Within recent years, grouping, usually homogenously, is again finding favor amoug school people. Grouping of pupils in classes, usually on the basis of ability, reduces the range of abilities in a classroom, thus allowing the teacher to emphasize classwork at more nearly one level. Through grouping, pupils may more nearly work on their own level. Through ability grouping all children are helped to better achievement. Very recently, much work has been done in the area of realigning science courses in the high school. This is usually taking the form of stepping present science courses down one grade and adding an entirely new course at the twelfth grade level. Many high schools across the country are offering college level courses in science.

This usually involves some type of grouping, or multiple track program. These courses provide an excellent opportunity for high school students to receive advanced placement in college. The advanced placement program is sponsored by the College Entrance Examination Board. A student may receive several hours of college credit by participating in this program. Those of us whose schools are located in a metropolitan area may utilize community resources. It has been quite common for years for classes to go into the community on field trips; however, there are people in the community who can be valuable in the classroom. I am thinking particularly of engineers, technicians, and scientists in industry. This is a source of up to date, highly professional classroom help. You may be surprised how willing industry is for its personnel to be utilized in this way. One more means of emphasizing science in a comprehensive high school is through our guidance services. These services may be utilized to counsel with students and parents when children plan their high school program of studies. Personnel in this field should work closely with parents and children in selecting courses. Counselors may do much in identifying talented, or gifted younsters, and helping each student during their high school career, and helping teachers do the most for these students.

The average or below average pupil may be assisted by his counselor in the selection of courses. Students must be shown their limitations so they can use careful judgment in the selection of courses.

I think, finally, that consideration must be given to terminal courses in the high school program of studies. This is another means by which a vast number of students are better prepared to live in a scientific age.

MR. ADALPHSEN:

The current controversy about education seldom goes beyond the emotional level. Educators and public alike mistakenly feel that progress lies in scapegoating, crash-programming, and retreating from reason.

Educational research shows that ability grouping, acceleration, retardation, and "stiffening" the curriculum are not the much sought easy answers. Educators forget in their rush to embrace "Kultur"

that secondary education is general education based on the ability level of the students. They forget the facts of individual differences in interest, abilities, environmental factors, and desires. They confuse the problems of discipline, school climate, and attitude with "ability." The "halo" of verbal ability fuzzes the concept of a typical student body underlying the proposals of "practical" or "classical" educationists.

Now is the time to be hard-headed, to implement theory, to act on the evidence from years of unbiased research data. This will be unpopular. Babies, buildings, and budgets tend to obscure the accepted role and purpose of secondary education. There is some satisfaction in having our best products as our strongest critics and supporters!

Philosophy is one of the basic problems of secondary science-education. Educators and laymen are in the peculiar position of advocating the product and rejecting the process. Contemporary worldly ills are popularly blamed on something variously mislabeled as "logical positivism" or "progressive education." Actually the philosophical implications of "science" (and science itself) are not fully understood by science teachers themselves, let alone the lay public. If science is to be taught, then the logical consequences of instruction in scientific methods and attitudes must be accepted by the public.

A curriculum of science consistent with the psychology of learning and building toward modern constructs of the natural world is of immediate concern. The science curriculum as standardized does not reflect the subsequent tremendous technological changes in the environment from which students come. Physiography, meteorology, geology, astronomy, the biological sciences, and so on could form the nucleus of junior high science. A required physical science course at the tenth grade level along with electives in physics and chemistry would complete the secondary curriculum.

More adventurous proposals demand a reworking of principles inherent in the various areas into a 4-, 5-, or 6-year science sequence. Adequate research data exist needing only creative effort to build such a program.

Correlated structuring of the mathematics sequence is necessary for the basic mathematical constructs of the science sequence.

Let's be scientific about what we do in science!

CLYDE W. ROTHGEB:

It is necessary that we start where we now are in our school program. The importance of the good teacher is attested by the fact that the most significant learning experiences we have had were directly related to those teachers remembered best. Physical facilities, curriculum, methods, materials, and the truest developmental psychology are not as vital as the teachers if there is learning to be accomplished. We may be out of balance in our spending. A good science program will cost money.

It is possible that better use may be made of science clubs, laboratory facilities and the like. We should evaluate our present program for teachers and for laboratory equipment use. We must remain on the alert for the gifted, creative student. It is necessary that we find and help the talented student better than we sometimes have been doing. We must build on the natural curiosity which is inherent in the science courses. We should investigate the possibilities for in-service training for teachers such as the National Science Foundation and Summer Science Institutes for Teachers provide. Carefully select the science textbooks, those that are up-to-date and well written. It is necessary that we continuously evaluate all phases of our high school program and that we not restrict ourselves to the science and math curriculum. The importance of all the sciences for a complete well rounded individual should be given some thought.

We need to re-examine our high school

program and place first things first in matters pertaining to budgets, schedules, programs, etc. Science laboratories, visual aids, and supplementary materials must all fall in their proper perspective. Science laboratories might be kept open certain evenings during the week and on Saturdays. We must have the capacity and courage to set up an education program for the last half of the twentieth century.

It is important that we give the talented child a chance to achieve his best. We must encourage individual and creative thinking. We need to challenge our gifted students with the toughest kind of research questions and programs. The gifted student must be educated to the limit of his ability. The above objectives would be impossible without an increased emphasis on guidance and counseling services.

Broad cultural horizons are important. We must drive students to the outer limits of their ability. Bad intellectual habits that will never be overcome can be easily established. A proper fusion of methods and content in all academic areas will be necessary if we are to provide an adequate learning climate for high school students.

CONFERENCE NO. 3

TOPIC: *How effective may the junior college become in providing terminal vocational education beyond the high school for youths seeking status as technicians?*

Chairman: Floyd Smith, Dean, Junior College, Iola, Kansas

Recorder: Roy F. Buntin, Dean, Senior High School and Junior College, Mobarly, Missouri

Panel Members: Robert J. Keller, Professor of Education, University of Minnesota, Minneapolis, Minnesota; Kenneth E. Anderson, Dean, School of Education, University of Kansas, Lawrence, Kansas

In the discussion of this topic by those present, including the panel, the following sequence emerged:

A. Growing needs in technical fields
   1. Agriculture is servicing more people, due to advances in technical knowledge.
   2. The need for retraining in other fields is obvious.
   3. Implications: Broader training for a field rather than for specific jobs; retraining in other fields.

B. General needs of industry
   1. General engineers, as a type, are being supplied.
   2. Highly specialized technicians, as a type, are in undersupply.

C. Deterrents to meeting needs by junior colleges
   1. Preparation for graduation from four-year institutions.
   2. Reluctance to branch out into new fields.
   3. Lack of clear-cut definition of vocational education.
   4. Expensive character of vocational education; only well-financed institutions can institute an adequate program.
   5. Hesitancy of some junior college administrators regarding appropriateness of vocational education.
   6. Difficulties of accreditation: Many four-year schools do not accept terminal credits; there is the misconception that junior college students and their training are inferior; and the number of persons qualified to supply basic leadership on the junior college level, is decreasing.

The meeting closed with reports concerning programs in junior colleges by individuals in the audience.

CONFERENCE NO. 4

TOPIC: *Can the high schools give chief emphasis to improving the quality of the educative process and at the same time endeavor to meet the needs of all American youth?*

Chairman: Cecil R. Erwin, Principal, Jeffersonville High School, Jeffersonville, Indiana

Recorder: Robert C. Nunn, Principal, Melvindale High School, Melvindale, Michigan

Panel Members: Tom V. Foraker, Principal, Center High School, Kansas City, Missouri; Lawrence W. Hanson, Principal, Central High School, Grand Forks, North Dakota

Mr. Erwin opened the conference by stating that every minute of the day we have planes aloft. Any plane carries more destructive power than was unleashed in the whole of World War I. Russia spends 17 percent of its national income on education while the United States spends 2.5 to 4 percent. We are a nation beset by problems of juvenile delinquency. We are becoming a nation of spectators instead of participants. These and many other problems confront us as educators today.

MR. FORAKER:

Since the memory of man runneth not to the contrary, high school principals

have reflected upon the problems raised by this question. One could develop many arguments on both sides regarding the degree to which this appointed task has or has not been accomplished by the present-day comprehensive high school.

The program of the secondary school has been brought into sharp focus the past several months and, in all probability, it may be a good thing. Self-appointed experts have suddenly arisen from all sides and if care isn't exercised, they will stampede the secondary schools to reorganize their programs without judicious thought; without basing it upon community needs and without first developing a *modus operandi* based upon sound, philosophical principles.

In spite of the many so-called theories in regard to the role the high school program should perform, one can combine them into a few broad groups: Some insist that we should turn back the clock to the classical high school prevalent until about 1925; the high school which they knew. To them it has the essential characteristics of a sound philosophy of education. Few can deny that it served the youth of that period very well indeed. However, when universal public education was extended through the high school, it was quite evident that the classical high school could not cope with the problems facing it. It gave little thought to individual differences and in many instances it ignored psychological facts regarding the laws of learning. It could not and did not endure in such a climate. The depression gave strong impetus to the so-called practical side of education, and the stage was set for revolutionary ideas concerning the role of the secondary school in this country.

In my opinion, we cannot solve the question before us today by turning back the clock. The reasons for the failure of the classical high school remain unchanged; in fact, they prevail more strongly with the years. The problem of individual differences is the problem presented by the question for discussion before this group, and it was the death knell of the classical high school twenty-five years ago.

Other groups contend that all is well with the present comprehensive high school. Such slogans as "Our schools have kept us free" will continue to prevail. However, the revolt from the classical high school in some areas of the country developed some strange concepts that were generally accepted by a tense, insecure, frustrated people beset by relief rolls, unemployment, the threat and the actuality of war. Suddenly, if an idea was new, different, or unorthodox it was accepted without challenge and high schools started on a wild race to see who could be more progressive than whom. "Learning by doing" was the watchword of the day and the idea struck the fancy of the educator and the public. However, it quickly became associated with everything except intellectual pursuits. Everyone suddenly became fearful lest something in the school create frustrations and inhibitions. Individual differences became almost a deity at whose altar were placed the broken parts of objectivity. The so-called self-discipline in many instances meant little or no discipline. The kiddie-kar curriculum was for the kiddies; they determined what should be taught. Competition in school was to be avoided like the plague. Grading systems were scrapped because a low mark would create frustration and reporting to parents was in a manner that would make everyone superficially happy. The "whole child" came into being and the school assumed too many of the responsibilities rightfully belonging to the home. Name almost any area save procreation and I am sure you could find some school systems that have assumed far too much responsibility in that area with reasonable doubt that any of it was done well.

Many parents were more than willing that their responsibilities be assumed by the school and too often, I'm sure, forced it upon reluctant school officials. Now schools are being accused of neglecting achievement in their whirling efforts to

create illusions of developing the whole child devoid of frustrations and inhibitions. It is too soon to evaluate the results of this progressive revolt from the classical school, but history may record it as a magnificent effort by educators far-sighted enough to see the breakdown in home responsibility and attempt to fill a need that was not otherwise being met.

Bringing the school program into sharp focus by the public may possibly do much for secondary education in this country. May it be to their everlasting credit, the people have a unique ability to determine how the schools shall best serve the needs of the time in which they live. From them may come the needed philosophy of operation. It is doubtful if they will attach much importance to the view-point of college professors, particularly those in liberal arts colleges who are generally still disciples of the classical school and are not equipped by training or experience to provide leadership in the formation of a workable philosophy for the comprehensive high school. It is quite possible that they will apply a twitch on the collective noses of professional educators, realizing they may have given them too much rein in the past twenty-five years and thereby developed a generation of well-rounded individuals who, in the words of one columnist, are "flat headed."

What are some of the concepts that may possibly come from such a philosphy, which, by standards of the past twenty-five years, may be ultraconservative?

1. They may develop an aim of education dedicated to the principle of logical thought.
2. They may build a school program around that principle so that everything that is taught in science, English, history, mathematics, etc. is a means to that end.
3. They may establish more flexibility by providing schools within the school; by ability rather than age-grade grouping in a lock-step method.
4. They may make competition respectable and establish the joy of individual accomplishment.
5. They may make the individual more responsible for his own development and his own behavior.
6. They may make secondary education more intellectual because thought, if logical, must be intellectual.
7. They may drastically change general school organization and eliminate the idea that ability grouping is undemocratic.
8. They may alter the concept that an important aim of education is to teach the ability to get along with people, particularly if it promotes blind conformity and acceptance, devoid of logical thought.

In conclusion, the aim of education in a democracy has many faces, and faces change as people change. People generally resist change, but change they will and change they do. Through this change, I think we may find the answer to the question before us today. We have been looking for the answer for a long, long time. It is long overdue.

MR. HANSON:

It is my belief that high schools can meet the needs of all American youth and still provide a challenging education to students with special abilities. It is one of the great challenges of our present times and our schools need to make a critical evaluation of our present offerings in order to improve the courses which need improvement and to determine which subjects are best suited to meet the needs of American youth today.

As our society is constantly changing, the needs for different types of training vary accordingly. As a result, we need to keep abreast of the times and to make changes wherever necessary. The criticisms leveled at education today can have a wholesome effect by causing us to re-examine our curriculum, our methods, and our goals. The tremendous amount of publicity being given to our educational systems will undoubtedly make the public realize that more support, both from a financial and an interest standpoint, needs to be given if education in the United States is going to prepare our young people for life in this material age.

We need to do a better job of discovering the students' capabilities early in their school career and to provide challenging subjects for them to study. We need to

plan courses carefully to fit the plans and abilities of all out students. To do this we may have to develop multi-level standards, require additional subjects for capable students, provide enriched programs, consider ability grouping, and perhaps even establish summer schools in larger areas to offer more courses for the specially talented youth. Consolidation of small schools needs to be furthered so that a varied curriculum can be offered. A closer coordination between colleges and the secondary schools is a necessity so that students coming to college with an excellent background in subject material will be put in advanced college classes.

Much work needs to be done if we are to meet the challenge of education in this period of our national development.

In the discussion that followed, EDGAR JOHNSON, of Wayne State University, said: "We do not have public understanding of what we are trying to do. People do not understand accrediting. There is a misunderstanding of what a high school diploma should mean. If education is for all—the high school diploma cannot mean the same for all."

ELMER MILLER, Hazel Park, Michigan: "We have not sold education as we should have. We have need for a better public relations program."

MR. FORAKER: "In every high school we have four groups: (1) The capable and willing. (2) The capable and not willing. (3) The willing and not capable. (4) The not capable and not willing."

FATHER STANLEY WITKOWIAK, Racine St. Catherine: "We have tried successfully having the student and teacher arrive at an estimated ability for each student to set standards for grading. We have told pupils and parents the truth about test results and abilities and have improved our school."

GEORGE HARGREAVES, East Liverpool, Ohio: "Schools are changed by society. Society is not changed by schools."

EDGAR JOHNSON: "We need to develop a wide range of opportunities in the secondary schools, not teach 'just the skim you love to teach.' "

CONFERENCE NO. 5

TOPIC: *What are desirable ways of improving school citizenship?*

Chairman: T. R. Ehrhorn, Principal, Rochester High School, Rochester, Minnesota

Recorder: George Lee, Principal, Dubuque High School, Dubuque, Iowa

Panel Members: R. T. Ferrell, Principal, Central High School, South Bend, Indiana; L. J. Knoeppel, Superintendent, Proviso Township High School, Maywood, Illinois

MR. EHRHORN:

Our citizenship problems are lessened to the degree that we present a curriculum offering that fits the needs and interests of the students. Incentive for the curriculum is important to learning interest. The atmosphere of the school must be conducive to learning. Cooperation of everyone is important. Problems vary much by community, depending upon geographic, economic and racial factors.

MR. VIHSTADT:

It is important to seek a climate conducive to good school citizenship. Wholehearted cooperation of students, staff and public is desirable. Physical environment has influence on school citizenship. Student leadership is very valuable in encouraging good school citizenship. This may manifest itself through student-council initiated activities, such as school codes and other projects in which student participation is feasible.

MR. KNOEPPEL:

Good student morale is a key to good self discipline. It is desirable for students to function in an adult manner—to study, evaluate and analyze. Adequate public relations are very beneficial in the promotion of school citizenship. Parents should be kept informed concerning the program of the school. It is wise to bring the community into the school. It is desirable to have one person on the staff in charge of publicity.

GENERAL:

Problems dealing with smoking, boy-girl relationships, abuse of the use of cars and problems related thereto were discussed. The question of whether the diploma is what it purports to be was considered. Some sentiment was manifested that the diploma is nothing more than an attendance certificate and that the high school transcript is more meaningful as an objective report of a student's accomplishment of his high school experience.

Representatives from the American Dependent Schools in Japan and Germany were present and participated in the discussion.

CONFERENCE NO. 6

TOPIC: *Will the National Testing Programs carry so much prestige that testing will determine what is to be taught?*

Chairman: Frank Womer, Director, Michigan School Testing Service, Bureau of School Services, University of Michigan, Ann Arbor, Michigan

Recorder: Robert Owen, Principal, Bettendorf High School, Bettendorf, Iowa

Panel Members: Lee Gilbert, Principal, Froebel High School, Gary, Indiana; J. Thomas Hastings, Director, Unit of Evaluation, Bureau of Educational Research, University of Illinois, Champaign, Illinois; Lyle Spencer, President, Science Research Associates, Chicago, Illinois

The following observations set the stage for discussion:

Which of the present testing programs may be considered national? What national testing programs are likely to be inaugurated in the days ahead? If a national testing program be inevitable, how can schools and colleges participate in the formation of policies concerning types and objectives of tests to the end that results will have sound value for students, schools, and colleges? We must know what we are trying to do.

* * *

The pressure of industrial pursuits for testing is a matter of concern. What are tests but samples of behavior and not crystal balls? Tests affect the curriculum in various ways: for professionals, "Winners bring prestige"; for an inadequately informed public, tests are goals, not means; for students, tests do not answer the question, "How do I get where I want to go?"

* * *

The answer to the topic under discussion is "Yes." Any program of evaluation, whether by formal testing or otherwise, naturally leads to modification and control of the purposes and processes of teaching and learning. Evidence sustains the assertion that the strength of American education—past, present, and future—depends on local initiative rather than any state or national program.

* * *

We're only half way toward solving the problems of test validity. Certain types of national testing programs must not be allowed to bring pressure on the structure and development of high school curricula. This must not be allowed to happen. Respect for local autonomy of schools and the electorates that they serve must be maintained. The educational philosophies and curricula of individual schools must be respected.

To harmonize large-scale testing programs with these objectives, Science Research Associates has moved to develop them according to these principles:

1. Tests in large-scale programs should measure educational development rather than "brightness"; and serve multi-purpose needs, not just one, such as guidance with scholarship as a by-product.
2. Tests in large-scale programs should measure ability to understand, to interpret, and to criticize; rather than the recall of facts which may have been memorized uncritically.
3. Tests in large-scale programs should measure intellectual skills developed in the total school program, or, indeed, in out-of-school experiences, rather than facts that can be learned only in highly specialized subject-matter areas.

Members of the audience participated freely by raising and discussing questions about the pros and cons of coaching and drilling for tests; granting awards based on test results to only a few; relative test achievements in small and large schools, the former being at a disadvantage in national testing programs such as the NMS; and the nationwide shift away from psychological examinations and toward testing in the physical and social sciences, and in quantitative thinking—broad achievement as opposed to specific aptitudes.

The session closed with the assertion that both students and parents believe that learning to think is important, as is competence in the fundamentals; but they are *not* interested in coefficient correlations.

Publications of the North Central Association

Unless otherwise indicated, address communications to the Secretary, North Central Association of Colleges and Secondary Schools, Charles W. Boardman, University of Minnesota, Minneapolis, Minnesota.

I. THE NORTH CENTRAL ASSOCIATION QUARTERLY, Editorial Office, 4019 University High School Building, University of Michigan, Ann Arbor, Michigan.

II. Publications produced or sponsored by Committees or Subcommittees of the Commission on Research and Service.

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B. Foreign Relations Series sponsored by the Committee on Experimental Units, available through Foreign Relations Project, 57 West Grand Avenue, Chicago 10, Illinois.

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C. Pamphlets produced as outgrowths of committee studies and projects.

1. Study of Teacher Certification
2. Report of the Self-Study Survey of Guidance Practices in North Central Association High Schools for the School Year 1947–48 and Check List of Elements in a Minimum and an Extended Program of Guidance and Counseling. (10¢)
3. Better Colleges, Better Teachers—Macmillan Company, 60 Fifth Avenue, New York 11, New York.
4. Incentives used in Motivating Professional Growth of Teachers (single copies 25¢, quantities of 10 or more 15¢ each).
5. The Workshop as an In-Service Education Procedure (single copies 25¢; quantities of 10 or more 15¢ each).
6. Improvement of Reading in Colleges and Secondary Schools.
7. Better Education for Nonacademic Pupils (single copies 25¢; quantities of ten or more, 15¢ each).
8. Some Guiding Principles for Student Teaching Programs.
9. Appraisal of the Current Status of Television as a Medium of Instruction—Educational Television and Radio Center, 2320 Washtenaw Avenue, Ann Arbor, Michigan.

D. *Syllabus—Functional Health Training*, by LYNDA M. WEBER. Published and distributed by Ginn and Company, Chicago.

E. *Improving Teacher Education Through Inter-College Cooperation*—Wm C. Brown, Co., 215 West Ninth, Dubuque, Iowa ($3.50)

III. Publications of the Commission on Secondary Schools, distributed free to members of the Commission and member schools. Available from Executive Secretary, Commission on Secondary Schools, North Central Association, 1904 East Washington St., Charleston 1, West Virginia.

A. *Policies, Regulations, and Criteria for the Approval of Secondary Schools*

B. *Handbook for State Chairmen and Reviewing Committees*

C. *Know Your North Central Association*

IV. Publications available from the Office of the Secretary, Commission on Colleges and Universities North Central Association, 5835 Kimbark Avenue, Chicago 37, Illinois.

A. *Revised Manual of Accrediting.* $2.00 (unbound)

B. Reprints from the NORTH CENTRAL ASSOCIATION QUARTERLY and other pamphlets available in limited numbers, free of charge.

1. Annual list of institutions of higher education accredited by the Commission on Colleges and Universities.
2. National list of institutions of higher education accredited by the six regional accrediting agencies, published by the National Committee of Regional Accrediting Agencies of the United States.
3. "Principles of Freedom in Teaching and Research," an extract from *The Evaluation of Higher Institutions*, Vol. II. *The Faculty*.
4. "Faculty Inquiry into Intercollegiate Athletics," 1953 (A guide to a self-evaluative procedure for faculty committees that may wish to use it).
5. "Athletics in Some of the Better Colleges and Universities," April, 1953.
6. "The Impact of Foundations on Higher Education." Addresses by ROBERT D. CALKINS, WILMER SHIELDS RICH, and L. K. TUNKS, 1954.
7. "Graduate Programs of Post-Baccalaureate Study for Teachers Leading to the Master's Degree," 1956.
8. "Statement of Policy Relative to the Accrediting of Institutions of Higher Education" and "Operation of the Accrediting Procedure."

V. Publications jointly sponsored by the North Central Association and other educational organizations or agencies.

A. *Your Life Plans and the Armed Forces*. 160 pages, 8½×11. Paper, $1.25; *Teachers Handbook*, 8½×11. Paper. 32 pages, $0.60. Order from the National Association of Secondary School Principals, 1201 Sixteenth Street, N.W., Washington 25, D. C.

B. *A Guide to the Evaluation of Educational Experiences in the Armed Services*, 1954 Revision: Formal Service Courses in Schools. Published in cooperation with the American Council on Education and eighteen other accrediting and standardizing educational associations. Order from the American Council on Education, 1785 Massachusetts Avenue, Washington 6, D. C. $5.00.

C. Publications of Cooperative Study of Secondary School Standards. Available from 1785 Massachusetts Avenue, Washington 6, D. C.

1. *Evaluative Criteria* (1950 Edition), cloth $3.50; paper. $2.50. Complete set of separate sections (*one copy each, Sections A through Y*) unbound $2.50; single copy of any section, $0.25. Separate sections (sold in banded sets of 5 copies of each section priced to effect a saving for schools requiring multiple copies of specific sections): A *Manual*, 90¢; B *Pupil Population and School Community*, 70¢; C *Educational Needs of Youth*, 60¢; D *Program of Studies*, 50¢; D-1 *Core Program*, 50¢; D-2 *Agriculture*, 50¢; D-3 *Art*, 50¢; D-4 *Business Education*, 50¢; D-5 *English*, 60¢; D-6 *Foreign Languages*, 50¢; D-7 *Health and Safety*, 50¢; D-8 *Home Economics*, 50¢; D-9 *Industrial Arts*, 50¢; D-10 *Industrial Vocational Education*, 60¢; D-11 *Mathematics*, 50¢; D-12 *Music*, 50¢; D-13 *Physical Education for Boys*, 50¢; D-14 *Physical Education for Girls*, 50¢; D-15 *Science*, 50¢; D-16 *Social Studies*, 50¢; E *Pupil Activity Program*, 70¢; F *Library Services*, 60¢; G *Guidance Services*, 70¢; H *School Plant*, 70¢; I *School Staff and Administration*, 90¢; J *Data for Individual Staff Members*, 35¢; X *Statistical Summary of Evaluation*, 70¢; Y *Graphic Summary of Evaluation*, 75¢.

VI. *A History of the North Central Association*, by CALVIN O. DAVIS, 1945. Pp. xvii+286, $2.00 plus postage. Available from Editorial Office of THE NORTH CENTRAL ASSOCIATION QUARTERLY, 4019 University High School, Ann Arbor, Michigan.